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direct contact cleanup levels. Of the 68,000 yards of "DNAPL" soils, we estimate that up to 9,000 yards are within the process area footprints described in the February 25 memo. If Ecology makes a determination to designate process area contamination as a listed Dangerous waste, then these soils would be considered to "contain" a listed waste which is subject to certain Land Disposal Restrictions.

Soil contamination extends well beyond the footprint of the process areas and may not be related to releases from the process areas or former waste disposal practices. The extensive site filling, contaminant transport mechanisms and lack of corroborated documentation regarding former waste disposal practices makes it difficult to establish the source(s) of soil contamination and whether the soil "contains" a listed waste.

We do not anticipate that the contaminated soils either inside or outside the process footprints will fail the hazardous waste characteristic test. It is likely that a substantial portion of the "DNAPL" soils will exceed State-only Dangerous Waste (DW) or Extremely Hazardous Waste criteria.

If the soil is designated to "contain" a listed hazardous waste, then a contained in determination may be applicable at this site. Under the contained in policy, Ecology has the flexibility to provide for contingent management of the soil as non-hazardous, as long as the soil is managed in a specific manner which further reduces risk to human health and the environment.

Treatment and Disposal Options

Our Feasibility study for the site considers a variety of treatment and disposal options for the contaminated soils. These are described in our memo of April 11, 1997. These options include:

- Off-site incineration at a commercial hazardous waste treatment facility
- On-site thermal treatment
- In-situ stabilization
- Capping

Off-site incineration is likely to cost in excess of $1000/ton. On-site thermal treatment is likely to cost $50/ton. We believe an appropriate strategy is to remove the K001 sediment sludge from the Baxter settling pond and incinerate these process residuals at an off-site commercial facility and to thermally treat the DNAPL soils on-site. This alternative (exclusive of other components of the cleanup remedy) is estimated to cost approximately $6,000K. In order for this alternative to be practicable, Ecology would need to approve a contingent management approach for the contaminated soil within

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the context of the Consent Decree. We believe the flexibility exists within the Contained In policy to implement a contingent management approach for the contaminated soils. Contingent management using thermal treatment will reduce risks to human health and the environment by removing the most significant source of groundwater contamination from the site.

If the soils within the process area footprints are considered to contain a listed waste and on-site contingent management is not permitted, then the cost of the soil treatment alternative is likely to exceed $16,000K. We believe these costs to be substantial and disproportionate to other lower preference alternatives, and therefore source removal will not be a component of the recommended alternative.

We realize this raises a number of substantive policy issues for Ecology. We appreciate your willingness to review these issues with your colleagues. The contingent management approach provides us with a higher preference alternative which will result in a more comprehensive treatment of site contaminants. On a separate track, Chuck Wolfe will prepare a memo discussing the legal basis for the proposed contingent management approach.

Port Quendall FAX Cover Sheet

RETEC

1011 S.W. Klickitat Way
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Seattle, WA 98134
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Date: 5/7/97 **Total Pages:** 5
From: John R. Ryan **Task Number:** 3-2438- 580
Message:

	Fax Sent to:	Fax #	Speed Dial #
☒	Jeff Graves - Port Quendall Company	453-1985	6
☐	Bob Collier - Port Quendall Company	453-1985	6
☒	Chuck Wolfe - Foster Pepper	447-9700	9
☐	Joe Delaney - Foster Pepper	447-9700	9
☐	Larry Martin - Foster Pepper	455-5487	60
☐	Ron Leibsohn - Leibsohn & Company	455-2196	65
☐	Don Stark - Goggerty & Stark	292-2063	67
☐	Jim Spitze - CNA Architecture	828-9116	34
☐	Arlan Collins - CNA Architecture	828-9116	34
☒	Gail Colburn - Dept.of Ecology	649-7098	30
☒	Brian Sato - Dept. of Ecology	649-7098	30
☒	Martha Turvey - Dept. of Ecology	649-7098	30
☐	Rick Huey - Dept. of Ecology	649-7098	30
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☐	Tanya Barnett - Assistant Attorney	438-7743	61
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☒	James Hanken - Schwabe Williamson	292-0460	36
☒	Lynn Manolopoulos - Davis Wright	646-6199	50
☐	Robert Cugini - Barbee Mill	271-8844	68
☐	Jennifer Henning - City of Renton	277-4455	63
☒	Georgia Baxter - J.H. Baxter & Company	(415) 570-6878	64
☐	Lawrence Warren - Warren, Kellogg	255-5474	66
☒	OTHER Tim Goodman - DNR		72
☒	Rod Malcolm - Muckleshoots		76
☒	Andy Kindig	820-9399	

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TRANSMITTAL LETTER

TO: Port Quendall Distribution **DATE:** May 7, 1997

PROJECT NO.: 3-2438-580

SUBJECT: Port Quendall Project

ENCLOSED PLEASE FIND: *Waste Designations and On-Site Waste Treatment*

DISTRIBUTION:
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Jeff Graves - Port Quendall Company
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Georgia Baxter - J.H. Baxter Company
Andy Kindig - Beak Consultants

Without attachment:
Christa Valles - DNR
Rick Huey - Ecology
Ching-Pi Wang - Ecology
Justine Barton - EPA
Tanya Barnett - Assistant Attorney General
Jana Huerter, Jennifer Henning - City of Renton
Glen Stamamt, Robert Otsea - Muckleshoot Tribe
Larry Warren - Warren, Kellogg

SHOULD YOU HAVE ANY QUESTIONS, PLEASE FEEL FREE TO CALL ME.

SINCERELY,
REMEDIATION TECHNOLOGIES, INC.

Lori Rocken for

John R. Ryan
Vice President

Progress Report for Treatability Testing of Sediments and Groundwater for Port Quendall

Prepared by:

Remediation Technologies, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, Washington 98134

RETEC Project No.: 3-2438-520

Prepared for:

Port Quendall Company
110 - 110 Avenue NE, Suite 550
Bellevue, Washington 98004

Prepared by:

Madonna Brinkmann, Environmental Scientist

Technically Reviewed by:

Mark Larsen, Redevelopment Specialist

May 13, 1997

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1 Introduction

The Port Quendall treatability study was initiated on February 25, 1997. This document presents the results from the first four tasks of the treatability study. This report summarizes the data from the treatability sample characterization, leachate testing, the mineralization studies, and the respirometry study. A complete treatability report containing all documentation of treatability testing methods and results will be issued in August after completion of soil column testing.

1.1 Treatability Study Objectives

Treatability testing was initiated with specific objectives as outlined in the Treatability Testing Work Plan. These objectives are described below. The objectives were developed based on the requirements of the Port Quendall Feasibility Study analysis and the remedial alternatives being considered for contaminated groundwater and impacted sediments.

One of the alternatives being evaluated is the in-situ treatment of contaminated groundwater using biological treatment. This process is well established as a feasible technology and has been used by RETEC during full-scale cleanup of numerous contaminated sites containing creosote and coal tar contaminants. The treatability testing being performed provides the site-specific data necessary for groundwater treatment system engineering. A modification of this alternative is also being considered which would place the biological treatment zone within the berm of a containment cell for polynuclear aromatic hydrocarbon (PAH) impacted sediments. This cell would be engineered to achieve biological containment of contaminated groundwater and sediment leachate. This second alternative is referred to as the "biofiltration cell" concept. Originally a third alternative was being considered in which wood-waste impacted sediments would also have been placed in the containment cell. That alternative has been deemed problematic from a permitting implementation standpoint. Treatability testing for this third alternative has been discontinued.

Objectives for treatability testing are outlined in Table 1-1. First, the study is to evaluate the leachability of primary contaminants from source-area and wood-waste sediment and DNAPL in order to determine which contaminant source is likely to have the greatest impact on biotreatment system performance. Second, the study is to evaluate the rate and extent to which indigenous (naturally-occurring) microorganisms degrade sediment leachate contaminants under the proposed treatment conditions. This microbial degradation process is

MEMORANDUM

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TO:	Brian Sato, Ecology	**CLIENT:**	Port Quendall Company
FROM:	John Ryan	**TASK:**	3-2438-571
DATE:	May 20, 1997	**RE:**	Groundwater Technologies

Several conceptual remedial alternatives were presented in a memorandum provided to the Washington State Department of Ecology (Ecology) by Remediation Technologies, Inc. (RETEC) on April 22, 1997. The individual technologies presented for groundwater in that memorandum will be discussed in more detail herein.

Prior to discussing these technologies, a summary of the groundwater quality for the Quendall Terminals and J.H. Baxter sites is presented. RETEC's interpretation is similar to the interpretation presented in the Remedial Investigation report (Hart Crowser, 1997). This data will be used as initial concentration inputs for any fate and transport evaluation.

The groundwater technologies shall satisfy the Threshold and Other Requirements of MTCA (WAC 173-340-360). At the conclusion of this memorandum, each of the groundwater technologies is then compared with criteria for determining whether a cleanup action is permanent to the maximum extent practicable and an estimated cost for implementing each technology is provided.

GROUNDWATER QUALITY

A short list of indicator constituents was presented in the Site Groundwater Model memorandum dated April 4, 1997. The indicator constituents include: naphthalene, chrysene, pentachlorophenol and benzene. These constituents were selected based on their detection frequency, toxicology, carcinogenicity and mobility. Saturated zone dense non-aqueous phase liquid (DNAPL) and dissolved metals have also been evaluated.

Polycyclic Aromatic Hydrocarbons (PAH)

The most recent groundwater concentrations for naphthalene and chrysene for each well are contoured and illustrated in Figures 1 and 2, respectively. These figures illustrate the areas that are in exceedance of the MTCA Method B Surface Water Protection Criteria. The contours are based on the groundwater concentrations but also consider soil data and knowledge of previous site activities.

The naphthalene plume appears to be associated with the former May Creek channel, the Quendall North Sump and the Quendall Pond. The chrysene plume appears to be associated with the former May Creek channel, Quendall North Sump, Quendall Pond and the Baxter Process Area. Based on the existing shoreline, the Method B criteria is exceeded at the point of compliance for both naphthalene and chrysene.

Pentachlorophenol (PCP)

The most recent groundwater concentrations for PCP for each well are contoured and illustrated in Figure 3. This figure illustrates the area that is in exceedance of the MTCA Method B Surface Water Protection Criteria. The contours are based on the groundwater concentration but they also considered the soil data and knowledge of site activities. The PCP plume appears to be associated with the Baxter Process Area. This plume appears to be limited to the upland portion of the site, although exceedances of surface water criteria beyond the point of compliance (existing shoreline) are possible.

Benzene

The most recent groundwater concentrations for benzene for each well are contoured and illustrated on Figure 4. This figure illustrates the area that is in exceedance of the MTCA Method B Surface Water Protection Criteria. The contours are based on the groundwater concentration but also consider soil data and knowledge of previous site activities. The benzene plume appears to be associated with the former May Creek channel, Quendall North Sump and the Quendall Pond. Based on the existing shoreline, the Method B criteria is exceeded at the point of compliance.

Saturated Zone DNAPL

Previous groundwater gauging and sampling programs reported the presence of DNAPL in monitoring wells BH-5, BH-20A, BH-21A BH-23 and BH25A on the Quendall Terminals property. DNAPL depth, thickness and recovery potential are discussed in previous reports for the property (Hart Crowser, 1996; Woodward Clyde 1989). The location of wells where DNAPL has been noted is shown on Figure 5. Wells with dissolved PAH concentrations exceeding 10 percent of constituent solubility have also been assumed to indicate the presence of DNAPL.

All of the wells with observed DNAPL exceeded 10 percent of solubility for at least one PAH compound and an additional six wells where product was not observed exceeded 10 percent of solubility for at least 1 PAH compound. These additional wells include two on the Quendall property (BH-20B and BH-18A) and four wells on the J.H. Baxter property (BAX-1, -2, -13 and -14).

The areas with saturated zone DNAPL are associated with the former May Creek channel, Quendall Pond, Quendall North Sump and J.H. Baxter process area. These impacted areas will be used as constant source inputs for any groundwater fate and transport modeling.

Metals

The only dissolved metal that exceeds the MTCA Method B surface water criteria is arsenic. These exceedance data are presented in Table 1. In general, the exceedances are distributed throughout the project area and the concentrations do not appear to be significant.

TECHNOLOGIES FOR REMEDIATION OF GROUNDWATER

The number of technologies to be evaluated in the Port Quendall Company Feasibility Study have been compressed due to the accelerated schedule. The following remedial technologies for groundwater are currently being considered:

- Groundwater Extraction, Treatment, and Discharge
- In situ Treatment
- Physical Containment
- DNAPL Recovery
- Natural Attenuation
- Institutional Controls and Monitoring

Groundwater Extraction, Treatment, and Discharge

Groundwater extraction at the Port Quendall site is currently intended as a backup measure to provide groundwater capture upgradient of a containment wall should *in situ* treatment not achieve the required criteria at the point of compliance.

Detoxification of contaminated groundwater is frequently performed by using pump-and-treat technology. This approach involves the use of extraction wells to pump groundwater from the subsurface where it is treated and ultimately discharged or reinjected to the groundwater. Pump-and-treat systems may be designed as the primary means of groundwater restoration, or may be configured to provide hydraulic containment near the downgradient edge of the plume of dissolved contaminants by removing and treating the contaminated portion of the aquifer flow.

Use of a groundwater extraction system will require treatment. Treatment technologies were selected based upon site knowledge and *Presumptive Response Strategy and Ex-Situ*

Treatment Technologies for Contaminated Groundwater at CERCLA Sites (EPA, 1996) and include the following:

- Phase Separation
- Precipitation
- Filtration
- Aerobic Biological Reactors
- Chemical or UV Oxidation
- Granular Activated Carbon Adsorption

Discharge alternatives include NPDES discharge to Lake Washington, reinjection to groundwater, and METRO discharge to the Renton POTW. Temporary METRO discharge permits for construction purposes typically are restricted to approximately 60 gpm. More long-term discharges for groundwater treatment systems are typically restricted to 17 gpm although variances may be sought. METRO discharge criteria are typically more lenient than for NPDES discharge or groundwater reinjection.

Phase separation, precipitation, and filtration are assumed to be required for any groundwater treatment system. Biological reactors and oxidation systems may be used to pretreat the prior to polishing by carbon adsorption or they be used as stand alone treatment if discharge is to the Renton POTW. Carbon adsorption could be used for polishing of pretreated water, as mentioned above, or it could be used as a stand alone water treatment system. The use of carbon treatment would be required for NPDES discharge to Lake Washington or reinjection to groundwater. Estimated costs for these treatment technologies are provided in Table 1. For cost estimation purposes, we have assumed only carbon treatment prior to NPDES discharge. Biological reactors or oxidation systems will only be used should they provide a cost savings relative to carbon-only treatment.

In Situ Groundwater Treatment

It is anticipated that *in situ* groundwater treatment will be performed under any remedial alternative that does not include excavation of all soil exceeding surface water protection standards. It is further anticipated that *in situ* treatment will be combined with a containment wall so that treatment may be focussed in a few controlled areas where groundwater will discharge to the lake.

In-situ air sparging is often an effective approach that combines air stripping in place with *in-situ* biodegradation. Air is injected into the groundwater, using compressed air in a well bore that contains a screened section below the water table (typical depths are approximately 10 feet below the water table). Where the contaminant is concentrated

and particularly volatile (e.g., benzene, methane), the potential for migration of vapors can necessitate combining air sparging with vacuum extraction in the vadose zone.

In-situ air sparging would elevate levels of dissolved oxygen in the formation and stimulate degradation of dissolved-phase constituents by native organisms present in the groundwater. Elevated dissolved oxygen levels would remain downgradient of the air sparging and would continue to stimulate biodegradation of constituents prior to discharge into Lake Washington.

Aeration would also raise the redox potential in the subsurface, encouraging oxidation, and therefore precipitation, of most dissolved metals (including arsenic). This would reduce dissolved metal concentrations in groundwater but, due to precipitate clogging of pore space, may also complicate the implementation of *in situ* treatment. The cost of air sparging is estimated at $150,000 to $350,000 per acre.

Physical Containment

Physical containment is anticipated to be an integral part of any remedial alternative that does not include treatment of all soil that exceeds surface water protection standards. This physical containment wall will likely be placed upland or nearshore along most of the Quendall Terminals property shoreline. A variety of construction materials and installation techniques are available for physical containment walls. For the Port Quendall project we will focus on slurry walls, steel sheet piles, and HDPE sheet piles. Should *in situ* soil mixing be used for soil treatment, this technique may also be considered for physical containment wall installation.

Physical containment will prevent lateral migration of DNAPLs towards the lake and may assist in the containment and treatment of groundwater. The wall may be installed with gates at the top or bottom that would allow focussed *in situ* treatment of groundwater. Installation of these gates would be difficult using the slurry wall alternative. Installation of the slurry wall may also be difficult if the wall is to be placed in a nearshore fill that is comprised on uncompacted soils placed in the lake. Slurry walls are typically 3 to 4 feet thick and have a hydraulic conductivity of 10^{-7} to 10^{-9} cm/s. Conductivities vary depending on the type and amount of admixtures and the characteristics of the excavated soil. These admixtures include bentonite, cement, fly ash, and attapulgite. Slurry walls can be installed to depths of up to 80 feet at a cost of $7 to $12 per square foot.

The principal technical concern with steel sheet piles is the amount of leakage that may occur at the interlocks. A field test using hot rolled steel piles with conventional unsealed joints (Bethlehem Steel PZ22) indicated a hydraulic conductivity of 1.5 to 5

x 10^{-7} cm/s (Starr, 1992). This rate may be expected to decrease as the joints corrode and become clogged with silt. Steel sheet piles can be installed at a cost of $12 to $20 per square foot.

Tests on HDPE sheet pile interlocks indicate that the seepage rate varies from 6 x 10^{-8} to 3.3 x 10^{-6} gpm per foot of interlock (GeoSyntec, 1993). For a 30-foot deep, 1000-foot long wall the total seepage rate would be approximately 4.5 x 10^{-4} to 2.5 x 10^{-2} gpm. This converts to a hydraulic conductivity of 1 x 10^{-9} to 6 x 10^{-8} cm/s. The primary concern regarding HDPE sheet piles is the ability to be installed in dense soil and the high cost relative to slurry wall and steel sheet pile walls. HDPE sheet piles can be installed at a cost of $15 to $25 per square foot.

DNAPL Recovery

There appears to be three areas of subsurface DNAPL migration towards Lake Washington from the Quendall Terminals property. These areas include the former May Creek channel, Quendall Pond, and the North Sump as indicated on Figure 5. Only migration from Quendall Pond appears to be impacting sediment quality in the lake. Migration from the former May Creek channel does not appear to have reached the lake and migration from the North Sump has been found at greater than 15 feet below the mud line.

DNAPL recovery tests were performed by Woodward Clyde at BH-5 (Quendall Pond) and BH-21A (former May Creek channel). DNAPL in BH-21A recovered to full thickness (5 to 6 feet) in approximately 16 hours. Recovery of DNAPL in BH-5 was substantially slower. However, based on observations during sediment sampling and evidence of sediment impacts, it would appear that more mobile DNAPL exists at Quendall Pond. In addition, due to the distance that has been traveled from the North Sump to the lake and based on evidence from sediment sampling, it would appear that DNAPL in the North Sump area is also mobile.

The most effective method for recovering DNAPL, that does not involve extensive groundwater extraction, is to install subsurface trenches that intercept the various lenses of migrating DNAPL. A perforated HDPE DNAPL collection line is placed in the bottom of the trench and the line is connected to a recovery sump. The trench is then backfilled with a coarse grained matrix. This matrix is designed to prevent clogging by native soil or piping of native soil. The trenches in each location would be installed to a depth of 20 to 25 feet. These trenches would be installed using bioslurry techniques, trench boxes, or using specialized trenching equipment. The approximate cost for installing a DNAPL recovery trench is $5 to $20 per square foot. Additional costs would be incurred for pumping equipment, piping, and operations and maintenance.

Natural Attenuation

Natural attenuation at the Port Quendall property will only be considered for use with those remedial alternatives that, at a minimum, include removal of all soil containing DNAPL at the site.

Natural attenuation may also be an effective means for containment and eventual cleanup of the groundwater. Monitoring would be required to confirm that natural attenuation is adequately protective. Several field-scale results have demonstrated that natural attenuation occurs, and that it can be protective. Natural attenuation rates for benzene and related volatile organic aromatic compounds have been measured at several sites, and the rates are generally in the range of 0.5 to 1.0 percent per day (Chiang et al., 1993).

There is also an increasing understanding of the types of information needed to demonstrate and verify that natural attenuation is occurring. Plumes undergoing natural attenuation generally exhibit zones of anaerobiosis near the source area , and eventual reappearance of dissolved oxygen at the plume boundaries. Such sites also often show depletion of other oxidants near the anaerobic areas (nitrate and sulfate, for example), increased concentrations of PAH or other specific compound degrading bacteria in areas with dissolved oxygen concentrations in the range of 0.5 to 2 mg/L, and losses of the most degradable constituents earliest in the plume (Borden et al., 1995).

Limitations on natural attenuation are similar to those for any other bioremediation process. The contaminants of concern must be sufficiently biodegradable, and the environmental conditions must be conducive to biological activity (e.g., adequate pH, nutrients, and a lack of chemical toxicity). Treatability studies are underway that will assist in the evaluation of natural attenuation at Port Quendall.

Institutional Controls and Monitoring

Institutional controls and monitoring will be an essential feature of any remedial alternative for the site. Long-term monitoring of groundwater will be required for any *in-situ* treatment option.

As mentioned earlier, natural attenuation may also be an effective means for containment and eventual clean up of the groundwater, and should be considered a part of any institutional controls remediation alternative. Monitoring would be required to confirm that natural attenuation is adequately protective.

Property deeds could be restricted or have deed notices imposed to prevent any development of groundwater within the affected portion of the groundwater for drinking purposes. Monitoring of groundwater quality would be conducted in conjunction with other remedial actions to track the composition of groundwater and ensure adequate performance of in-place remedial systems or the effectiveness of natural attenuation.

Evaluation of Groundwater Remedial Technologies

Ecology guidelines give preference to selecting permanent solutions to the maximum extent practicable for site cleanup actions. The criteria for determining whether a cleanup action is permanent to the maximum extent practicable are summarized from WAC 173-340-360 as:

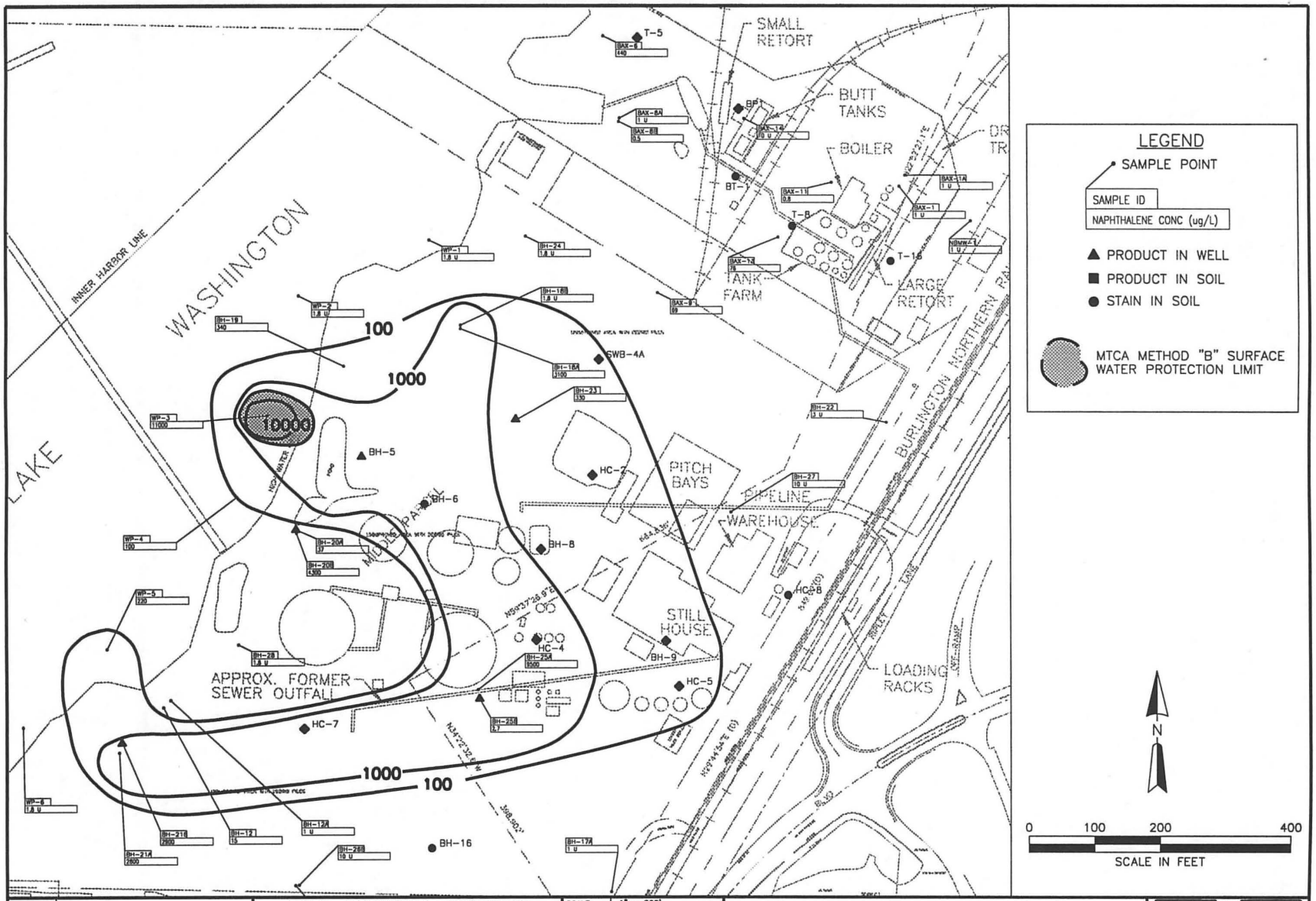
- Overall protectiveness of human health and the environment
- Long-term effectiveness
- Short-term effectiveness
- Permanent reduction of toxicity, mobility and volume of hazardous waste
- Ability to be implemented
- Cost

Each groundwater remedial technology was evaluated using these criteria. The results of this evaluation are summarized in Table 1.

It is currently uncertain which of these technologies will be used, however, all we be included in remedial alternatives evaluated in the Feasibility Study. Groundwater treatment could be required for excavation dewatering, stormwater collected during remediation, and any groundwater extracted using a pump-and-treat system. For costing purposes it was assumed that the any groundwater treatment system would be approximately 75 gpm.

Table 1 Groundwater Remedial Technologies Compared to Ecology Criteria

Soil Remedial Alternative	Overall Protectiveness of Human Health and Environment	Long term Effectiveness	Short Term Effectiveness	Reduction in Mobility, Toxicity and Volume	Ability to Implement	Capital Cost	Annual O&M Cost
Groundwater Extraction and Treatment	high	high	medium	low	medium	$125,000	$20,000
Groundwater Treatment						$500,000	$250,000
▸ Building	-	-	-	-	-		
▸ Equalization	-	-	-	-	-		
▸ Phase Separation	-	-	-	-	-		
▸ Precipitation	-	-	-	-	-		
▸ Filtration	-	-	-	-	-		
▸ GAC Adsorption	-	-	-	-	-		
Biosparging	high	high	high	medium	high	$150,000 to 350,000/acre	$40,000
Physical Containment	medium	medium	high	low	high	$7 to 25/sq ft	-
DNAPL Recovery Trench	medium	medium	medium	high	high	$5 to 20/sq ft	$40,000
Natural Attenuation	medium	high	high	low	medium	-	$160,000
Institutional Controls	low	medium	medium	low	high	-	-



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PORT QUENDALL COMPANY

3-2438-560

SCALE 1" = 200'

CAD FILE 2438S97S

NAPHTHALENE
SHALLOW GROUNDWATER
CONCENTRATIONS

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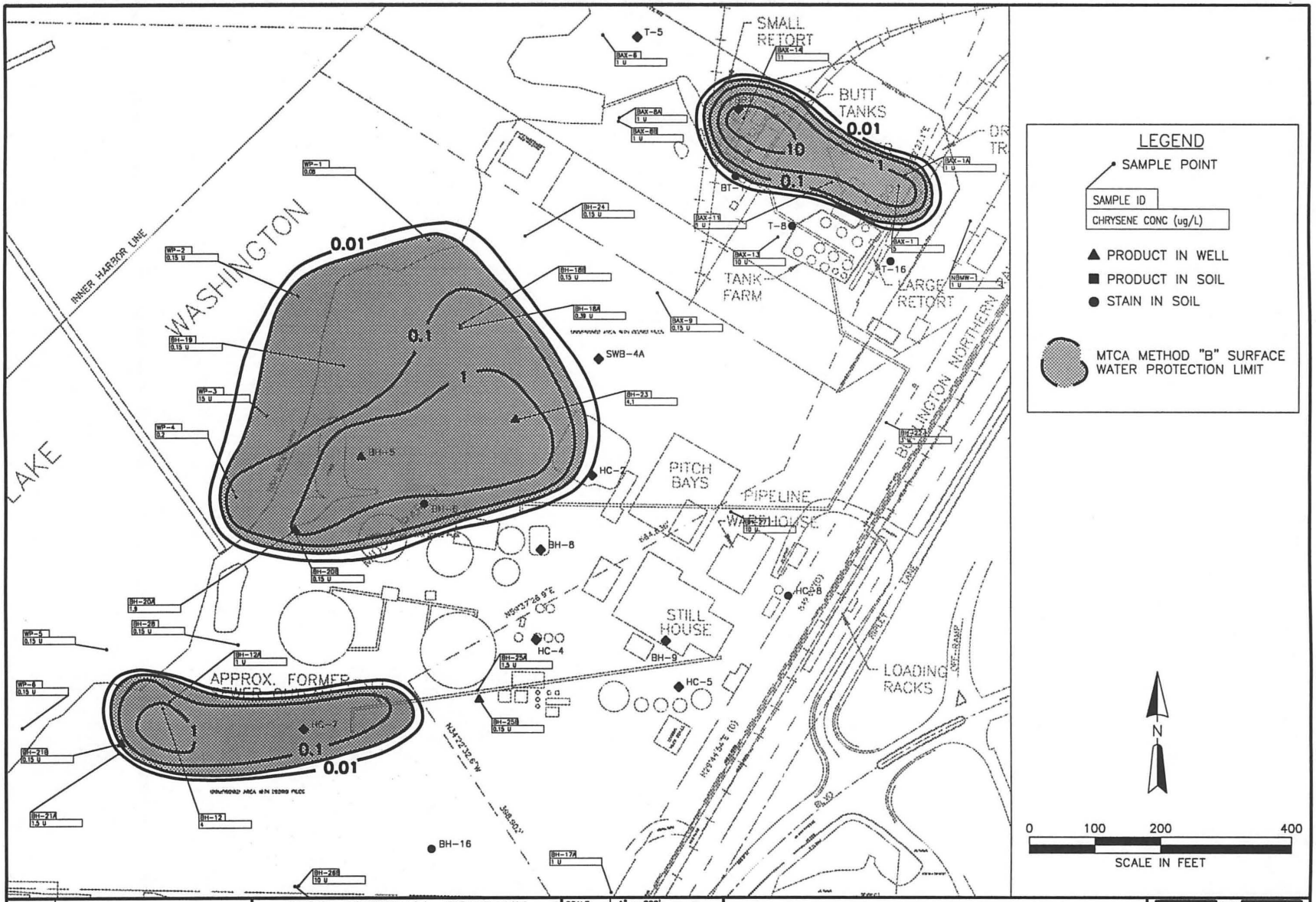
DRAWING NO. FIGURE 1 REV. 0

DNR-002418



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PORT QUENDALL COMPANY

3-2438-560

SCALE 1" = 200'

CAD FILE 2438S96S

CHRYSENE
SHALLOW GROUNDWATER
CONCENTRATIONS

REMEDIATION TECHNOLOGIES INC

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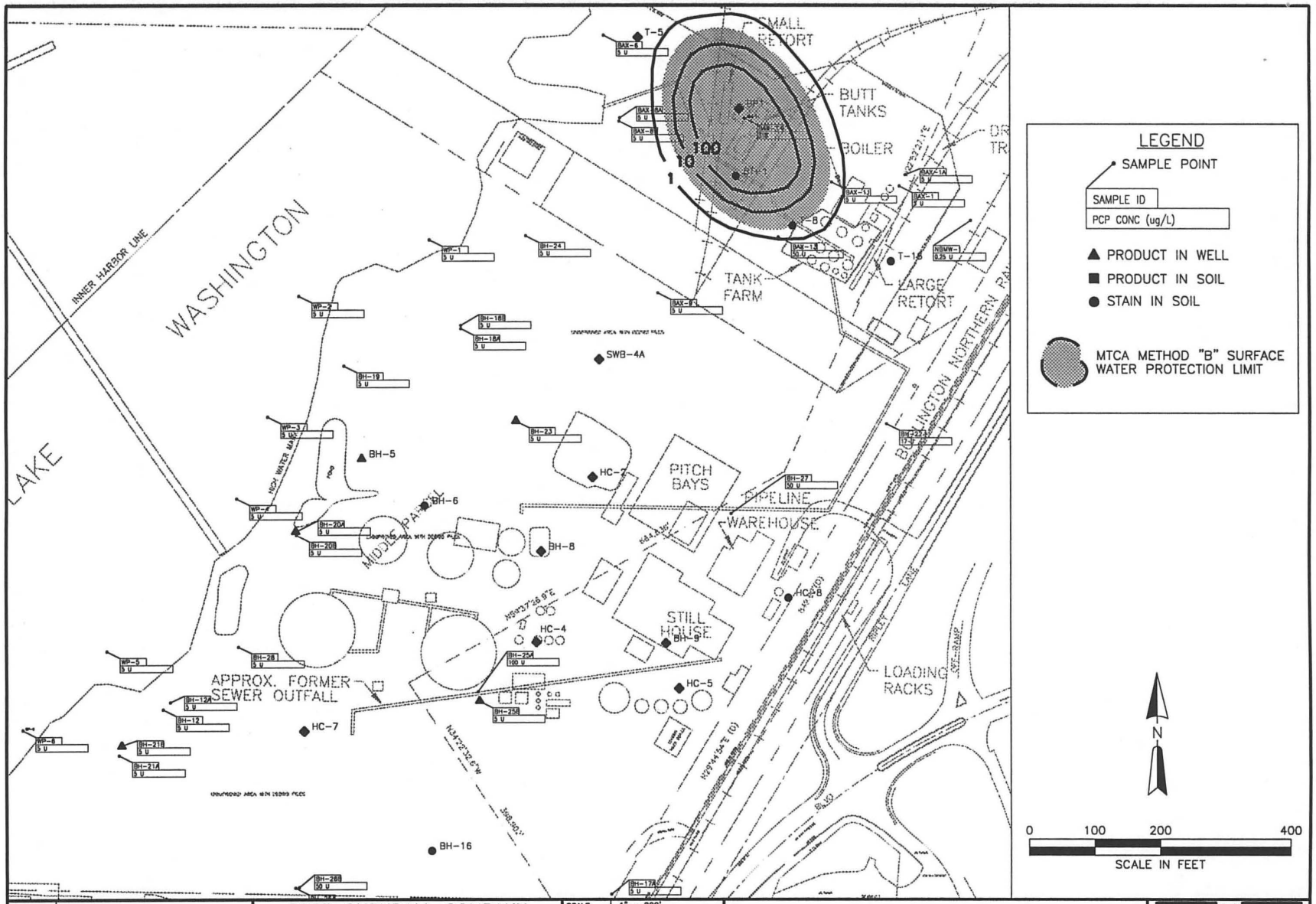
DNR-002419



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NO	DRWN	DATE	REVISION		CHKD	DATE	APPVD	DATE	

PORT QUENDALL COMPANY

3-2438-560

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CAD FILE 2438S985

PENTACHLOROPHENOL
SHALLOW GROUNDWATER
CONCENTRATIONS

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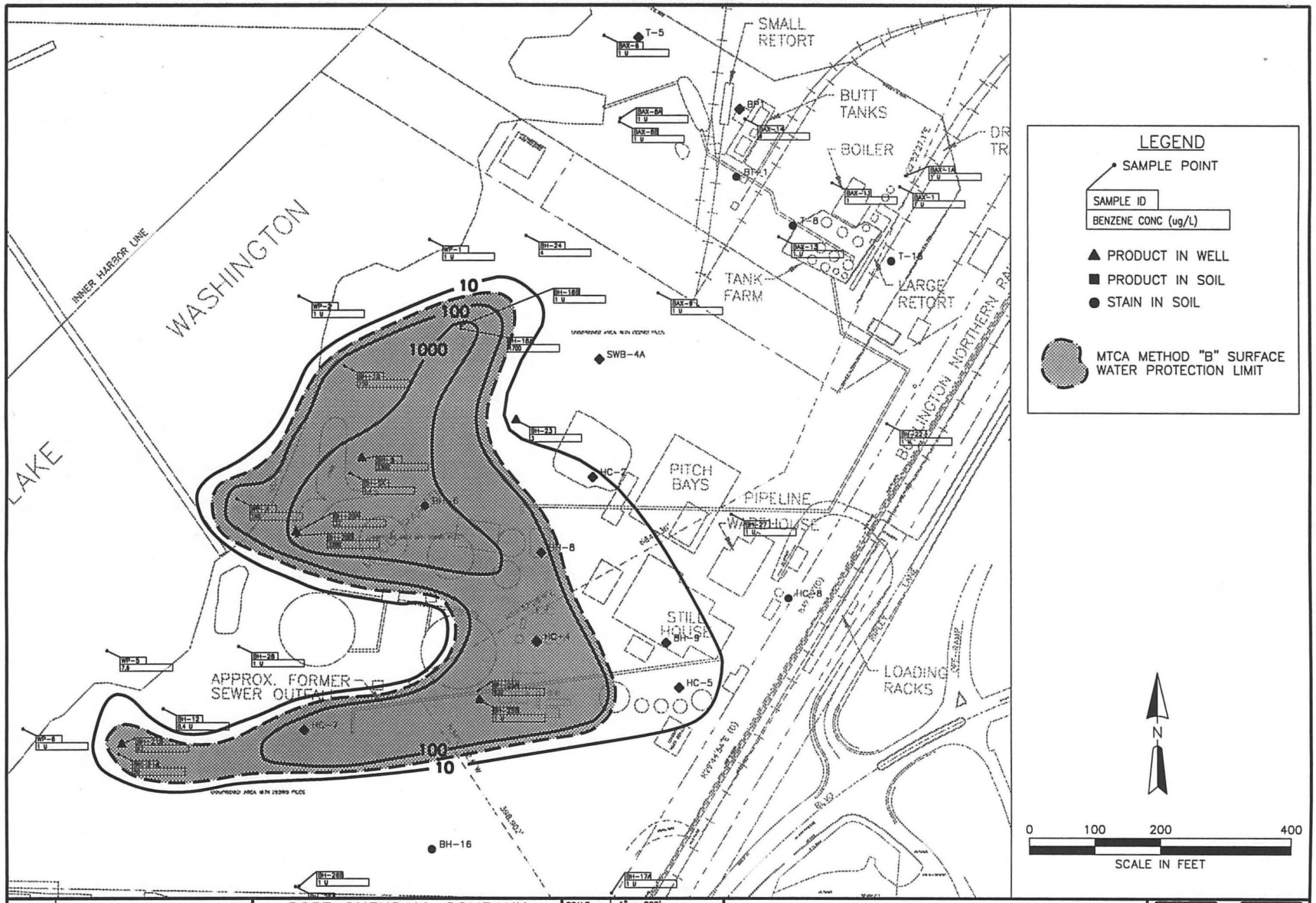
DRAWING NO. FIGURE 3 REV. 0

DNR-002420



PORT QUENDALL COMPANY

3-2438-560

SCALE 1" = 200'

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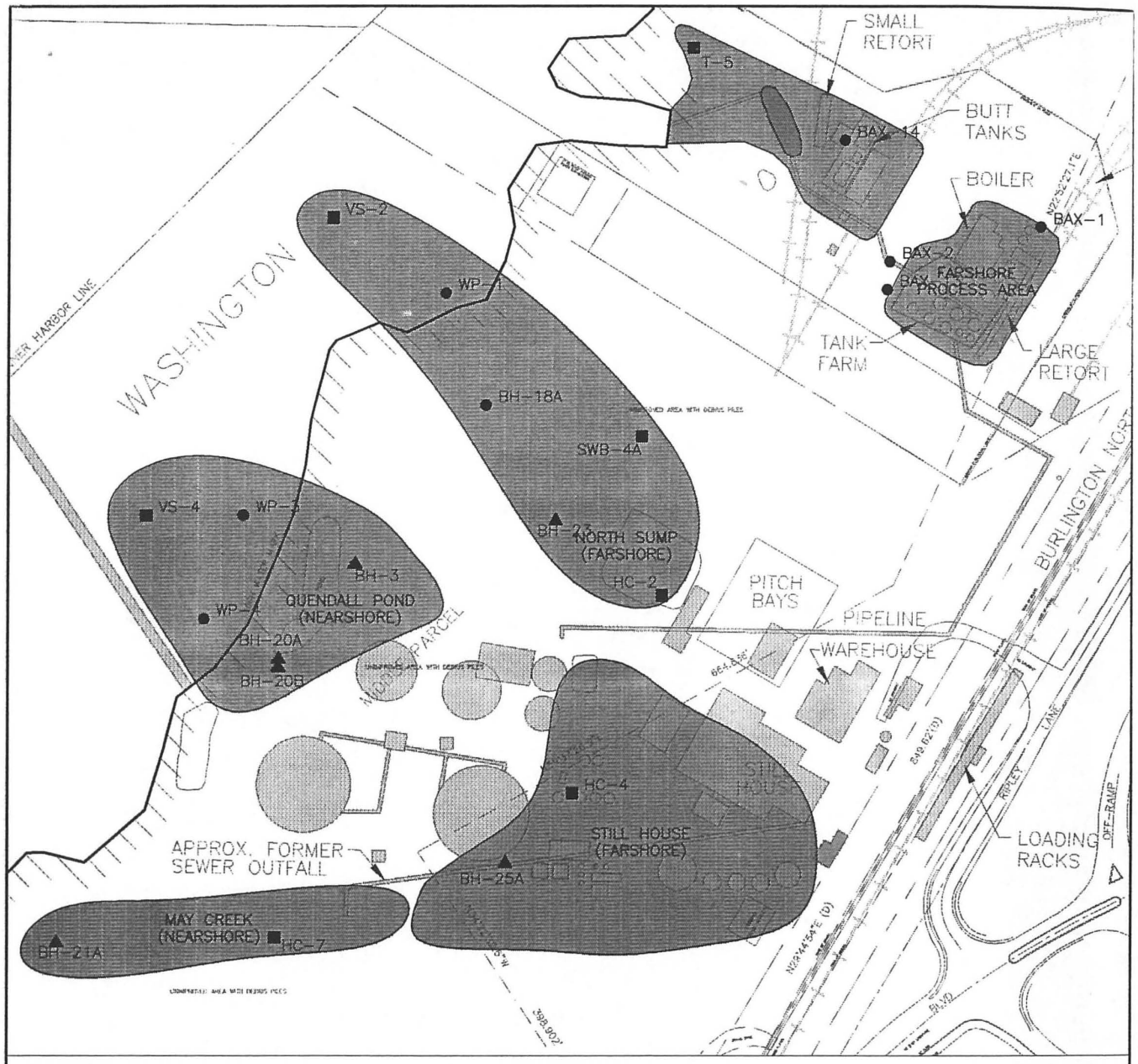
NO	DRWN	DATE	REVISION	CHKD	DATE	APPVD	DATE

BENZENE
SHALLOW GROUNDWATER
CONCENTRATIONS

RETEC
REMEDIATION TECHNOLOGIES INC

DRAWING NO. FIGURE 4 REV. 0

DNR-002421



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TRANSMITTAL LETTER

RETEC
1011 S.W. Klickitat Way
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FAX (206) 624-2839

TO: Port Quendall Distribution **DATE:** May 20, 1997

PROJECT NO.: 3-2438-571

SUBJECT: Port Quendall Project

ENCLOSED PLEASE FIND: *North Baxter Statistical Analysis Memorandum*
Groundwater Technologies Memorandum

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SHOULD YOU HAVE ANY QUESTIONS, PLEASE FEEL FREE TO CALL ME.

SINCERELY,
REMEDIATION TECHNOLOGIES, INC.

Grant Hainsworth

Grant Hainsworth, P.E.
Civil Engineer

Lake Washington Sediment Project

Final Report

by

G. Allen Burton, Jr., Ph.D.

and

Carolyn Rowland

Wright State University
Institute for Environmental Quality
Dayton, OH 45435

Prepared for

Remediation Technologies
1011 SW Klickitat Way
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May 21, 1997

Introduction

Wright State University was contracted by Remediation Technologies to perform acute and chronic toxicity testing on seven sediments collected from the Lake Washington area in Seattle. The test methods used were acute and chronic (draft) of the United States Environmental Protection Agency (USEPA) which were deemed most appropriate for regulatory purposes.

All sediment samples were collected by Remediation Technologies (ReTec) personnel and shipped to Wright State for analysis on two separate occasions. The first shipment arrived on 2 February, 1997 by Federal Express priority mail in two coolers and included sample numbers: JB-1A, JB-2A, JB-3A, JB-4A, JB-5A and JB-6A. The second set of samples arrived on 19 February, 1997 in one cooler also by Federal Express priority mail and contained sample numbers: JB-7, JB-8 and JB-9. Upon arrival samples were immediately removed from the coolers, inspected for damage and/or leakage and stored in a 5/ C until test initiation. All samples arrived intact in excellent condition on both shipping occasions. Chain of Custody forms are enclosed.

Before the onset of testing, written and oral correspondence from Mark Larson of ReTec requested that sample numbers JB-5 and JB-6 be dropped from the assay and replaced by sample numbers JB-7, JB-8 and JB-9, for a total of seven field collected samples. A USEPA reference sediment (West Bearskin (WB)) was also included in the assay as the standard laboratory control. All samples were requested to be tested concurrently.

Methods

Chironomus tentans - The *C. tentans* 10 day growth and survival assay was initiated on 27 February, 1997 and ran through 9 March, 1997 under controlled laboratory conditions at Wright State University's Laboratory Animal

Research facility. The Assay was conducted according to USEPA Test Method 100.2, Section 12 of EPA/600/R-94/024, *Methods for Measuring the Toxicity and Bioaccumulation of Sediment Associated Contaminants with Freshwater Invertebrates* without deviation.

Hyalella azteca - The *H. azteca* 10 day growth and survival assay was initiated on 27 February, 1997 and ran through 9 March, 1997 under controlled laboratory conditions at Wright State University's Laboratory Animal Research facility. The Assay was conducted according to USEPA Test Method 100.1, Section 11 of EPA/600/R-94/024, *Methods for Measuring the Toxicity and Bioaccumulation of Sediment Associated Contaminants with Freshwater Invertebrates.* The only deviation from this protocol was the reduction of replicate test beakers from eight to two due to the concurrent chronic exposure assay.

The *H. azteca* chronic exposure assay (42 days) was also initiated on 27 February, 1997 and ran through 10 April, 1997 at Wright State University's Laboratory Animal Research facility. This assay was conducted according to the protocol outlined in the manuscript in preparation: Use of Sublethal Endpoints in Sediment Toxicity Tests with the Amphipod Hyalella azteca, 1997 by Ingersoll, C.G., E.L. Brunson, F.J. Dwyer and N.E. Kemble (also described in the below referenced Quality Assurance Project Plan. The method in this manuscript is currently under evaluation by Wright State University Dayton, Ohio, USGS Columbia, Missouri and USEPA ERL/Duluth and eventually will be standard ASTM and USEPA protocol. On day 28, survival was determined and only samples JB-3A, JB-4A, and JB-9A were continued in the water only reproduction exposures due to the poor survival.

At test initiation, all sediment subsamples per site were thoroughly homogenized together and added to 300 ml high form lipless test chambers to

100 mls. Overlying culture water (175 mls) was added to each beaker and allowed to settle before organisms were added. Upon organism addition, beakers were separated by site and organism then placed in Zumwalt dilutors for the duration of the assay.

QUALITY CONTROL

Standard USEPA QA/QC procedures for both biomonitoring and water quality analyses were adhered to throughout the duration of the assay without deviation. Detailed protocols for the acute toxicity test methods are outlined in the "Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates (EPA/600/R-94/024) and in the Quality Assurance Project Plan for the U.S. Environmental Protection Agency's Freshwater Sediment Toxicity Methods Evaluation (EPA Cooperative Agreement No. CR-824161). This latter document also includes the protocols for the chronic toxicity test methods and also QA/QC protocols for all testing. Overlying water quality in test beakers and organism health were monitored daily for quality and consistency. Upon test termination (organism retrieval), any questionable results were double checked by the laboratory manager and senior technicians on all occasions. No performance criteria or water quality exceedances were noted during these tests which would have compromised testing results.

Results and Discussion

Survival, reproduction and dry weight measurements consistent with test protocol were evaluated at the designated time intervals and the appropriate statistical analyses were conducted. These results can be found in the raw data and summary tables attached.

The USEPA standardized tests for acute toxicity to *Chironomus tentans* and *Hyalella azteca* showed the primary lethality effects to be in sample JB-8A

for the midge and to samples JB-2A and 8A for the amphipod (Table 1). Acute to chronic toxicity was observed in some of the samples. Growth effects were greatest in sample JB-7A for the midge and JB-1A for the amphipod. Greater growth is sometimes observed in samples with high lethality which may be due to greater food availability. Survival in the West Bearskin reference was good.

Currently, there are no standardized chronic toxicity tests for sediments in the United States or any country. The OECD, The Netherlands, and the United States are currently preparing draft chronic toxicity test methods for sediments; however, none have been finalized. Those under development in Europe use the midge *Chironomus riparius* while the USEPA is developing methods for the two test organisms used in the current project, *Hyalella azteca* and *Chironomus tentans*. These two assays are long term, lasting 42 days or longer and preliminary findings reveal these assays to have endpoint measurements which are more variable than short term acute tests which measure only survival or growth (weight or length). It should be emphasized that no performance criteria exist for these USEPA methods at this time, nor have any been purposed. This means that no criteria for appropriate survival, growth or reproduction exist for controls which allow for scientifically valid decisions on test acceptance or rejection.

We currently have a grant from the USEPA to conduct an international interlaboratory variation (round-robin) evaluation of the draft chronic sediment toxicity test methods which involves up to 20 laboratories from across the nation and Europe. Results from this study will be available later this summer. Preliminary results from that evaluation show a high degree of variation in the draft methods for *C. tentans* and *H. azteca*. This USEPA evaluation is also attempting to develop adequate control sample methods. Water-only exposures for benthic organisms are inappropriate for controls, as they introduce stress. Artificial sediments are being tested, including an alpha-cellulose mixture (used

in the current project) and an OECD peat moss mixture. Neither of these formulations have proved to be highly desirable and a natural reference sediment appears, at this time, to be the best control sediment for use. Unfortunately, in the current USEPA and Lake Washington projects, the West Bearskin reference was not appropriate. We have ruled out operator (intra-laboratory) variation as a contributing issue in the current project by conducting double to triple checks on counts using experienced technicians.

In addition, several laboratories participating in the evaluation are showing poor responses in the West Bearskin reference sediment. The sediment used in the current study for ReTec was split from this same West Bearskin sample. This suggests that this sediment should not be used as a reference sample comparison. For this current project, the inadequacy of the USEPA reference sample suggests that site reference samples JB-4A and JB-9A be used as reference samples. An oily sheen and slight petroleum odor was noticed in samples JB-1A, JB-3A, and JB-7A on test termination. We observed the greatest numbers of indigenous species (such as snails, nematodes, oligochaetes, isopods, and plants) and numbers of organisms in the JB-4A sample. JB-9A had fewer organisms, but showed good responses. We have calculated significant differences using both samples as the reference.

Despite the higher level of variability which is expected in samples which are toxic and samples which detect chronic toxicity, these assays are useful at detecting lower level effects. However, conventional statistical assays and data interpretations have been shown to be ineffective and misleading which evaluating chronic toxicity test data. These data are frequently non-linear in nature and may show hormesis (stimulation) at low toxicant exposures. Long term exposures (>20 days) with *H. azteca* and *C. tentans* or *C. riparius* have been shown in the peer-reviewed literature to be useful assays of chronic effects, which is why they are being standardized in North America and Europe. No

other assay, *e.g.,* Microtox, has been shown, in the peer-reviewed literature, to be widely accepted by the scientific community as a ecologically valid indicator of chronic sediment toxicity. At this point in time the use of some biomarkers and tissue residues are useful as indicators of exposure, which may or may not reflect significant ecosystem impacts.

In addition to the apparent inherent method variability which exists in the draft chronic method, there appear to be sample related factors which may be contributing to replicate variability. It is well documented that some indigenous organisms may act as predators during the assay and contribute to lethality results. These indigenous organisms are not likely to be distributed equally or feed equally among replicates. We also observed a large number of large yellow pellets (1-5mm) (enclosed) within the sediment samples that showed high levels of variability (sample enclosed). We have been unable to identify what these balls are, which are soft in texture and can disintegrate when physically compressed. Again, these yellow balls were not equally distributed among replicates and may have contributed to the high variability in those particular samples. Other samples which did not contain the balls showed lower levels of variation.

RETEC

Table 1

Sample Number	Species	10 Day Survival	10 Day Growth (mg)	28 Day Survival	28 Day Growth (mg)	35 Day Survival (Day 28-35)	42 Day Survival (Day 28 - 42)	42 Day Growth (mg)
JB-1A	C. tentans	76.25% ± 2.7	1.55 ± 1.02					
JB-2A	C. tentans	93.75% ± 0.92	0.928 ± 0.25					
JB-3A	C. tentans	86.25% ± 1.41	0.891 ± 0.11					
JB-4A	C. tentans	100%	1.005 ± 0.16					
JB-7A	C. tentans	85% ± 1.31	0.716 ± 0.12					
JB-8A	C. tentans	68.75% ± 3.8	0.797 ± 0.19					
JB-9A	C. tentans	82.5% ± 1.66	0.82 ± 0.12					
WB	C. tentans	91.25 ± 0.834	0.9998 ± 0.16					
JB-1A	H. azteca	85% ± 0.7l	0.297 ± 0.19	30% ± 22.4	0.199 ± 0.12			
JB-2A	H. azteca	70% ± 0	0.133 ± 0.057	19.1% ± 37.8	0.206 ± 0.09			
JB-3A*	H. azteca	90% ± 0	0.065 ± 0.02	72.5% ± 33.6	0.260 ± 0.03	94.5 ± 7.78%	86.3 ± 9.8%	4.65 ± 3.65
JB-4A*	H. azteca	95% ± 0.7l	0.077 ± 0.02	85.8% ± 2.19	0.338 ± 0.06	77.9 ± 34.58%	67.5 ± 34.8%	5.13 ± 1.30
JB-7A	H. azteca	90% ± 1.41	0.1 ± 0.01	44.2% ± 30.3	0.143 ± 0.07			
JB-8A	H. azteca	70% ± 0	0.061 ± 0.01	36.7% ± 32.6	0.173 ± 0.07			
JB-9A*	H. azteca	100%	0.057 ± 0.01	49.2% ± 45.4	0.195 ± 0.09	81.48 ± 23.5%	75.9 ± 28.4%	2.12 ± 0.76
WB*	H. azteca	90% ± 0	0.050 ± 0.008	32.5% ± 27.0	0.29 ± 0.08	94.4 ± 13.68%	69.4 ± 35.4%	1.50 ± 0.82

*transferred to water - see Table 2

RETEC

Table 2

Sample Number	Replicate	28 Day Adult Survival	35 Day Adult Survival	35 Day Neonates	42 Day Adult Survival	42 Day Neonates	Neonates/ Female
WB	2	8	8	0	3	0	0
	4	8	8	0	8	0	0
	5	2	2	0	2	0	0
	8	3	3	0	3	0	0
	10	5	5	0	4	0	0
	12	3	3	0	0	0	0
	13	3	2	0	2	0	0
	14	4	3	0	3	0	0
JB-3A	1	10	10	0	9	5	1
	2	10	8	0	8	0	0
	6	8	8	0	6	0	0
	7	8	8	2	8	5	1.67
	9	9	8	0	7	2	2
	10	9	9	0	9	2	2
	11	10	10	0	8	13	3.25
	12	9	8	0	8	0	0
JB-4A	2	9	9	13	3	1	0.17
	3	11	8	0	4	0	0
	4	10	10	0	4	0	0
	5	9	9	5	6	0	0
	6	9	9	9	3	1	0.33
	9	9	0	0	0	0	0
	12	11	7	0	3	2	0.67
	14	9	8	0	5	1	0.5
JB-9A	6	6	2	0	1	0	0
	7	10	8	0	7	0	0
	8	10	8	0	9	7	1.17
	10	8	8	1*	6	2	1
	12	10	9	0	9	5	0.83
	13	10	9	0	9	12	2

PORT QUENDALL MITIGATION ANALYSIS MEMORANDUM

Prepared for:
Remediation Technologies, Inc.
1011 Klickitat Way, Suite 207
Seattle, Washington 98134

Prepared by:
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23 May 1997
Project No. 22253

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MEMORANDUM

RETEC
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Seattle, WA 98134
(602) 577-8323
FAX (602) 577 7455

TO: Brian Sato, Ecology
CLIENT: Port Quendall Development
FROM: Tim Thompson, RETEC
TASK: 3-2438-424
DATE: June 2, 1997
RE: Letter from Martha Turvey, Ecology, dated May 8, 1997.

This memorandum is in response to the above referenced letter, and to address subsequent discussions with Ecology on May 21 in Bellevue, and again on May 27 at the bi-weekly PQD meeting here. Specifically, the objective of this memo is to request clarification from Ecology on some issues, and to describe RETEC's proposal for moving forward with the FS on the original schedule, in the absence of additional chronic bioassay data.

First of all, allow me to extend our thanks to you for meeting with us. We have enjoyed our working relationship with Ecology, and are glad of good relations when hard, frank discussions are necessary. While this was a difficult meeting for all involved, we appreciate working through those issues together.

Sediment Cleanup Levels

It is our understanding from the May 8 letter that Ecology has approved the 100 ppm sediment polynuclear aromatic hydrocarbon (PAH) cleanup level proposed in RETEC's April 24, 1997 sediment memo. With regards to the proposed pentachlorophenol (PCP) cleanup level, we understand that Ecology's position is that the value is not necessary, because the cleanup of Baxter Cove is driven by PAH's, not PCPs. Given Ecology's stated position in the May 8, 1997 letter that PCP levels in the sediments outside of Baxter Cove are not sufficient to require remedial action, based upon previous bioassays at the site, we concur that the PCP cleanup value is no longer necessary. We will move forward with the FS using the PAH value, and dropping any further discussion of the sediment PCP cleanup value.

Rejection of the chronic Hyallela bioassay

It is our understanding that Ecology has rejected the use of the chronic *Hyallela azteca* bioassay results, based upon poor control and reference sediment survival. Furthermore, Ecology will require that a valid chronic test be conducted before a decision can be made that allows the grey area sediments to remain in place, with no further remedial action required.

Chronic Bioassays

Ecology has suggested that it would accept the Microtox test on previously frozen, archived sediments as an appropriate chronic bioassay. We truly appreciate Ecology's efforts to build agency consensus so that PQD could move forward in a timely fashion. However, we do not recommend the use of Microtox as the chronic bioassay.

It is RETEC's opinion that Microtox does not represent a relevant endpoint for application to the Port Quendall sediments. This is in part based upon our view that a diminished light output from a marine bacterium in a 15 minute saline extract from freshwater sediments does not represent an ecologically valid endpoint. Observations by the SPI camera and in sediment grabs of chironomids in those sediments suggest that the longer-term *C. tentans* test may be more relevant.

Bioassay Interpretive Criteria - QA and Regulatory

We would appreciate a clear, concise statement from Ecology on the regulatory interpretive standards being applied to the so-called "grey zone" wood wastes. It is our understanding that for this program, Ecology has defined the woodwaste Sediment Quality Criterion (SQS) as sediments having an RPD >0.4 cm, but less than < 0.8 cm, and the Maximum Cleanup Level (MCUL) as >50% wood waste. For grey zone sediments that exceed the SQS, confirmatory bioassays may be run to determine if the material is of sufficiently poor quality to require a remedial action. Sediment exceeding the MCUL will require remedial action.

Ecology committed at the May 21 meeting to develop control and reference performance criteria, quality assurance criteria, and interpretive criteria for application to the following freshwater sediment bioassays:

- *Hyallela azteca* 10-day survival and growth test.
- *Chironomus tentans* 10-day survival and growth test.
- *Chironomus tentans* 21-day growth test
- Microtox

We assume that this will include both SQS and MCUL criteria. While it is not RETEC's intention at this point to conduct Microtox tests, we would request that Ecology still provide us with those criteria, in the event that test is used in the future. This is a critical piece of information for grey area interpretation in the FS, and we look forward to receiving Ecology's guidance at the earliest possible date.

RETEC is now in receipt of the bioassay data package from Wright State University for the *Hyallela* and *Chironomus* 10-day tests. Once we receive Ecology's criteria, we can proceed with our internal QA review and statistical analyses of the data for submittal. We have also had discussions with EPA's lab in Duluth concerning the 21-day *C. tentans*

June 2, 1997
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test, and have initiated discussions with two prominent national laboratories concerning conducting that test.

Grey Zone Remedial Options

As discussed at the meeting, it is RETEC's intent to proceed forward with the FS by developing remedial alternatives for the entire grey zone. For purposes of the FS we will assume that a remedial action is necessary if Port Quendall Company proceeds with the development in the absence of confirmatory bioassay data. We intend to develop several remedial options for the whole grey area, and not conduct any additional bioassays at this time. We would appreciate your comments on this issue. Pending further discussions with Ecology, at the moment we will simply proceed with developing the following remedial alternatives:

- Dredge and removal of the ca. 180,000 cyd
- Enhanced Natural Recovery
- Sediment Recovery Zone

We have reviewed the rule concerning the SRZ, and understand the need for sedimentation rate data and benthic infaunal data. We believe that some of that information is available through the SPI images collected to define the grey zone. We are requesting that Ecology provide us with additional guidance on what would be the demonstration requirements for either an ENR or SRZ option, and what would be the longer term monitoring requirements.

TO: Pt. Quendall Team Members

FROM: Martha Turvey

SUBJECT: Recommended endpoints for the Pt. Quendall bioassays

DATE: June 2, 1997

Background: We have directed RETEC to run a suite of bioassays in order to characterize an area of contaminated sediments known as the grey zone. The grey zone has been defined as an area that contains less than 50% wood waste, is shown to be impacted but not above the PAH clean up level that was previously agreed upon. To determine whether this area is in need of remediation, RETEC has run a series of bioassays, two acute and one chronic to be consistent with marine sediment standard policies. They selected Hyalella azteca, both acute and chronic tests and Chironomus tentans acute test. The Hyalella chronic test failed because both the reference and control were well below any acceptable standard. RETEC will need to obtain a chronic endpoint and so they will probably run either a Microtox test or a Chironomus 21 day test. This decision has not been made as of the date of this memo so this memo will propose endpoints for both tests

The drafting of an endpoint is a policy decision that needs to be consistent with the SMS rule. The menu of marine standards provide the following to guide us:

SQS: Different tests
Absolute mortality 25%
15% plus reference
80% Microtox
70% juvenile

SQS range of adverse effects equals 15% - 30%

CSL: Different tests
Reference plus 30%
Reference plus 30%
50%

CSL range of adverse effects equals 30-50%

If we stay within these ranges and compare when possible similar species we can recommend the following:

Hyalella azteca:

	Mortality	Growth
SQS	25%	30%
CSL	30% + ref.	50%

(note: Hyalella is similar to Rhepoxynius and so the % are similar)

Chironomus tentans: 10 day acute

	Mortality	Growth/reduction
SQS	25%	25%
CSL	40%	40%

Chironomus tentans: 21 day chronic

	Growth
SQS	30%
CSL	50%

Microtox: SQS = 80% reduction
CSL = none

WASHINGTON STATE DEPARTMENT OF
Natural Resources

FACSIMILE COVER LETTER

To: Tim Greeman

Telephone: FAX:

From: KING DISTRICT- MARITIME UNIT
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Sender's Name
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Date: June 3

Time: ~~June~~ 3:30

Total number of pages (including cover sheet): 6

Description: for Simon

June 11, 1997

VIA FACSIMILE

Brian Sato
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Northwest Regional Office
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Bellevue, WA 98008-5452

Post-It™ brand fax transmittal memo 7671	# of pages ▸ 5
To Jonathan Swinth	From Tanya Barrett
Co. DNR	Co. Ecology
Dept.	Phone #
Fax # 586-2756	Fax #

Re: Port Quendall Development

Dear Brian:

This letter is in response to our telephone discussion earlier this week. As you know, we discussed the potential implications for the current owners of the Barbee Mill, Quendall Terminals and J.H. Baxter properties if Port Quendall Company ("PQC") does not purchase these three properties. This letter provides the current property owners' positions on the issues we discussed and requests written confirmation of Ecology's positions on these issues.

We understand that Ecology has been considering the potential long-term impact of the PQC due diligence activities if PQC does not purchase the three properties. More specifically, Ecology is considering the extent to which the property owners: 1) will be subject to certain Ecology decisions made during PQC's due diligence process (e.g., cleanup levels), and 2) will be required to perform certain remedial actions based on Ecology decisions reflective of PQC's proposed development (e.g., Ecology selection of preferred remedial actions in PQC's feasibility study). We understand that Ecology is spending a significant amount of time, at PQC's expense, to develop cleanup levels and identify remedial alternatives for the properties.

Before we express our positions on these issues, we want to remind you that these properties are owned by three separate entities: Barbee Mill is owned by Barbee Forest Products; Quendall Terminals is owned by a joint venture comprised of Altino Properties and J.H. Baxter; and J.H. Baxter is owned by J.H. Baxter & Company. Two of the properties are the subject of either an order or decree with Ecology; the Barbee Mill site is not subject to any action by Ecology and is not on any Ecology MTCA list. Each of these properties had a different historical use and has a different current use. The only connection between the properties is their contiguous locations and PQC's interest in developing the three properties simultaneously. If PQC does not purchase the properties, the properties are likely to continue to be separate in terms of use and ownership.

The PQC process has been ambitious in its scope and timing. There are meetings at least bi-weekly to discussing these issues and develop a consensus for moving forward with the proposed cleanup and development. While representatives of the current property owners are present at these meetings, we attend for two reasons: 1) to make certain that the representations

made by the PQC team are accurate as they relate to the current property owners' interests in the properties; and 2) to assure that, if PQC terminates its prospective purchaser negotiation, the current property owners are prepared to move forward with additional investigation and remediation on the Quendall Terminals and J.H. Baxter properties pursuant to our formal agreements with Ecology. We are not present to provide technical input on appropriate cleanup levels or remedial alternatives. On the contrary, the current owners' technical consultants are completely unfamiliar with the results of the PQC work.

As you know, PQC has tried to develop a consensus-based process with the agencies, in an effort to expedite the MTCA, SEPA and other agency processes. To avoid interference with that process, we have not commented on the actions, analyses or proposals by PQC. We have not actively participated in the development of cleanup levels, remedial alternatives, or any other activities relevant to the final cleanup actions on these properties. Rather, we have allowed PQC to put forth its positions without any objections or contrary positions put forth by the current property owners. We became passive participants based our understanding with Ecology and the Attorney General's office, expressed at the beginning of this process, that the PQC process would not be binding in any way on the current owners.

As you will recall, when it became apparent that the PQC team would be doing significant due diligence on the properties, the owners of the Quendall Terminals and J.H. Baxter properties and Ecology agreed to suspend the current owners' obligations under the Agreed Order and Consent Decree respectively until the termination of the PQC process. The purpose of suspending the obligations of the property owners under their Agreed Order and Consent Decree was twofold: (1) to avoid having both the property owners and Ecology engage in efforts which would be unnecessary if PQC decided to purchase the properties, and (2) to allow the PQC process to proceed without potentially conflicting and adversarial input from the property owners. If, however, the results of the PQC process are going to be made binding upon the property owners, the property owners will have no alternative but to again become active participants in the process, causing unnecessary duplication of efforts for everyone and interfering with PQC's consensus-building efforts on the project.

We understand that any data that is collected during the PQC due diligence process must be taken into account in any further investigations and analyses performed on the properties. For example, PQC has developed a significant amount of sediment data, and that data will be used, along with any additional sediment data that may be collected by the current owners, to evaluate and develop remedial alternatives for the Quendall Terminals and J.H. Baxter properties.

I. Cleanup Levels/Remedial Alternatives.

We understand that Ecology is spending a significant amount of time developing cleanup levels and evaluating remedial alternatives at the request and expense of PQC. We believe that investment of resources will be beneficial to both Ecology and the current owners, because we may be able to utilize the PQC work to achieve greater efficiency in future work on these issues. However, if the PQC team decides not to proceed, the current owners must be provided an opportunity to educate their consultants, collect additional data, evaluate cleanup levels and develop remedial alternatives.

The difference in the positions of PQC and the current owners are probably best illustrated by our relative approaches to the wood waste issue. PQC's one year due diligence requires that PQC make expedient decisions as a prospective purchaser. However, this should not foreclose the current owners' position that Ecology does not have the regulatory authority to regulate wood waste as a hazardous substance under MTCA. We vigorously dispute Ecology's authority to require the removal of wood waste based solely on the arbitrary standard expressed by Ecology in the PQC meetings. We have seen no technical basis for Ecology's position that any sediments containing greater than 50 percent wood waste must be removed. We have not expressed these objections, however, because we are not an active part of the PQC process. Therefore, any acquiescence by PQC on this issue should not be viewed as acquiescence or agreement by the current owners with Ecology's position on this issue. We also reserve the right to identify appropriate cleanup levels and put forth our analysis to support cleanup levels for hazardous substances on the Quendall Terminals and J.H. Baxter properties.

Likewise, any remedial alternatives that are presented and recommended by PQC are not necessarily remedial alternatives that are appropriate or applicable to future site uses, other than those proposed by PQC. The remedial alternatives must be evaluated with specific site uses in mind, with specific exposure scenarios and post-development conditions included in the analysis. To impose the PQC remedial alternatives on the current owners assumes that the current owners will develop the site in the same or similar manner, with the same proposed uses, as PQC.

Finally, on a larger policy level, it would be contrary to the Brownfields initiatives if a potential purchaser's negotiations with the agencies are imposed on current property owners. Undoubtedly, a potential purchaser of contaminated property will be unwilling to purchase unless it can negotiate its liability with the agencies prior to acquiring the property. On the other hand, if a seller will be bound by a potential purchaser's negotiations, the seller will make sure that its contract with the purchaser prohibits or severely restricts the purchaser from approaching the agencies. The result of this will be to discourage parties from any creative attempts to remediate and redevelop these kinds of properties.

II. Barbee Forest Products.

PQC has not entered into a property purchase agreement for the Barbee Mill site. As a result, from the current owner's perspective, the formal due diligence process for PQC has not commenced. The owner has provided PQC with some opportunities to undertake limited sampling, but the current owner will not authorize additional sampling until PQC enters into a property purchase agreement.

III. Quendall Terminals.

The current owners of Quendall Terminals believe that the Amendment to the Agreed Order clearly identifies their obligations if PQC does not purchase the property. The uplands investigation is complete. If PQC notifies the current owners that it does not intend to purchase Quendall Terminals, then the current owners will evaluate the sediment data available for Quendall Terminals and either provide Ecology with a scope of work and schedule for additional sediment investigation or notify Ecology that such an investigation is not required. The current owners will then proceed with additional activities as outlined in the Agreed Order.

The Amendment to the Agreed Order was signed by Ecology as well as the current property owners. It clearly reserves the current owners' rights to perform a sediment investigation, risk assessment and feasibility study. The Agreed Order was negotiated at a time when Ecology was very aware of the PQC process, and the Agreed Order clearly outlines the current owners' rights and obligations with respect to the site.

IV. J.H. Baxter.

J.H. Baxter has also understood that it would have additional time to evaluate data and submit studies and reports as a part of its obligation under the current Consent Decree and subsequent Amendments.

We request that you consider our positions on the issues raised in this letter and provide written confirmation to clarify any misunderstandings that may have developed during the PQC due diligence process. We hope that any misunderstandings can be clarified so that all parties can proceed pursuant to the agreements between the current owners and PQC and pursuant to any existing order or decrees between Ecology and the current owners. We appreciate your assistance in resolving these matters.

Very truly yours,

Davis Wright Tremaine LLP

Lynn T. Manolopoulos

Very truly yours,

Schwabe Williamson & Wyatt

James C. Hanken

cc: Tanya Barnett
Chuck Wolfe

F:\DOCS\32695\1\00003LTR.DOC
Bellevue/06/11/97

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office, 3190 - 160th Ave S.E. • Bellevue, Washington 98008-5452 • (206) 649-7000

June 24, 1997

Mr. John Ryan, Project Manager
ReTec, Inc.
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134

Dear John:

RE: **Draft Evaluation Guidelines for Acute and Chronic Bioassay Testing in Port Quendall Sediments**

Per your request, we have developed draft evaluation guidelines for interpreting acute and chronic toxicity information for Port Quendall sediment testing. In so doing, I have convened meetings with representatives from EPA, the Corps, DNR, and the Muckleshoot Tribe. Although the guidelines are preliminary, they represent a broad consensus amongst the agencies concerning how best to regulate sediment toxicity data for the project. In the absence of freshwater sediment standards, the agency will use BPJ in conducting site-specific test interpretation.

This letter is designed to accompany the attached spreadsheets (Tables 1 and 2 for acute and chronic testing, respectively), representing bioassay evaluation guidelines for freshwater sediments at the Port Quendall site. Information developed for these tables was developed from a number of sources, including the Ecology's Sediment Management Standards (SMS; WAC 173-204), the US ACE/EPA Inland Testing Manual, ASTM guidance, PSDDA guidance, and other key sources. These tables provide the following guidance for each test by specific endpoint:

- control and reference sediment performance criteria, generally expressed as percent survivorship;
- statistical testing requirement
- numerical guidelines (designed to equate to Low Effects/Moderate Effects thresholds [SQS/CSL, respectively]).

It is noted that *both* a statistically significant testing result *and* exceedance of a numerical guideline would be required before a test would be regarded as a "hit". This is widely consistent with interpretive guidelines for the SMS rule, the PSDDA program, the Inland Testing Manual, and other national-level guidance. Statistical testing requirements would be different for different types of data, requiring different types of transformations, adjustments, and tests.

Acute testing guidelines. Table 1 shows the guidelines developed for the two acute tests run for the project. While both tests included a measurement of somatic (i.e., non-reproductive) growth, growth is normally accepted as a quantifiable endpoint for the midge (*C. Tentans)* alone.

Amphipod (H. azteca). The 20% absolute mean mortality allowed for amphipod control organisms is higher than the amphipod mortality allowed in the SMS for marine sediments, and is reflective of the greater variability in freshwater amphipod survivorship (see ASTM test protocol). The numerical guidelines for SQS and CSL, respectively, of 10% and 15% mean mortality greater than reference, reflect the guidance provided in the SMS rule. As noted above, the growth endpoint for the amphipod test is primarily qualitative and will be used for interpretation of mortality data (i.e., as a "tie-breaker").

Midge (C. tentans). The 30% absolute mean mortality allowed for midge control organisms is also reflective of high variability in midge control survivorship (see ASTM test protocol). To assist in interpreting data related to robustness and animal vigor, an additional control/reference QA criterion for weight gain of 0.6 mg per surviving organism is incorporated as well (consistent with ASTM guidance). A reference sediment performance criterion of 80% relative to control, in keeping with the SMS rule, is also proposed. This criterion is used for evaluation of both acute and chronic testing.

The numerical guidelines for SQS and CSL, respectively, of 10% and 20% mean mortality greater than reference, reflect the guidance provided in the EPA/ACE Inland Testing Manual. Unlike the amphipod test, the growth endpoint for the midge test is regarded as quantitative. The proposed numerical guideline for SQS and CSL, respectively, of 20% and 40% mean biomass reduction relative to reference, reflect the guidance provided in the SMS rule for the chronic polychaete test.

An important consideration in the acute midge test is that both acute endpoints will be considered in the interpretation of overall test results, although both will also serve on an independent basis. For example, an exceedance of the growth endpoint alone would constitute a single SQS exceedance.

Chronic testing guidelines. Table 2 shows the guidelines developed for three chronic tests, one of which (chronic amphipod test) has previously been run during the project (control sediment performance criteria were not met). Two of these tests utilize a chronic mortality endpoint (amphipod and midge test), while all three utilize chronic sublethal endpoints (growth and neonate production for the amphipod test, growth only for the midge test, bioluminescence for the Microtox test).

Control/reference sediment performance criterion relating to both growth and reproduction are also proposed, in keeping with SMS guidance. These include a criterion for reference organisms of 80% relative to control organisms. A parallel performance

criterion for the reproductive endpoint, which is 70% reference organism neonate production relative to control organisms, is also proposed.

Amphipod (H. Azteca). The 20% and 30% absolute mean mortality, respectively, allowed for amphipod control and reference organisms is reflective of the relatively high variability in freshwater amphipod survivorship (see NBS/WSU test protocol). In the absence of all external guidance relating to this test, we propose to adopt the acute guideline for SQS and CSL, respectively, of 10% and 15% mean mortality greater than reference (consistent with the SMS rule for acute testing). Unlike the acute test, the growth endpoint for the amphipod test is more quantitative (similar to the midge growth test) and will be used to interpret the overall test. To allow for inherent biological variability associated with individual growth rates, we propose numerical guideline for SQS and CSL, respectively, of 30% and 50% mean biomass reduction relative to reference (consistent with the SMS rule for the chronic polychaete test).

Little or no guidance for interpretation of the chronic amphipod reproduction test has been developed; these values will in part be based on complete life cycle data from laboratories with extensive experience in culturing these organisms. Control and reference performance would be evaluated based on day 28 through day 42 alone after the exposure has been changed, to more closely address conditions during which reproductive performance is under evaluation. Relatively conservative guidelines for neonate production for SQS and CSL, respectively, of 20% and 30% reduction in mean neonate production relative to reference are proposed.

As with the acute midge test (see above), all three of these chronic endpoints will be considered in the interpretation of overall test results, although each will also be viewed independently. For example, an exceedance of any of the endpoints alone would constitute an overall exceedance, but if all three endpoints exceeded SQS guidelines, this would constitute a single SQS exceedance.

Midge (C. tentans.) The 30% and 35% absolute mean mortality, respectively, allowed for midge control and reference organisms is identical to the requirement for acute testing. The numerical guidelines for SQS and CSL, respectively, of 30% and 50% mean biomass reduction relative to reference, reflect the guidance provided in the EPA/ACE Inland Testing Manual and the SMS rule, with greater growth reductions allowed to accommodate for longer (chronic) exposure periods.

As with the acute test, both endpoints will be considered in the interpretation of overall test results, although both will also serve on an independent basis.

Microtox (P. phosphoreum). Interpretive guidelines are consistent with the SMS rule for marine sediments. Reference sediment extracts will be calibrated as blanks to serve as benchmarks for measuring suppression of bioluminescence. No control sediments are used. The Low-Effect Level (equivalent to the SQS) is an 80% or greater reduction in

light generation relative to reference sediment extracts. No statistical testing is required, and no CSL guidance is available.

Please feel free to contact me or any of the concerned agencies concerning these interpretive guidelines. We anticipate that they will be helpful in assisting delineation of specific areas potentially requiring remediation.

Sincerely,

Martha Turvey
Toxics Cleanup Program

MT:mt:ct

cc: Brian Sato, Ecology
Gail Colburn, Ecology
Teresa Michelson, Ecology
Justine Barton, EPA
Stephanie Stirling, US ACE
Allan Chartrand, Muckleshoot Tribe
Dave Bortz, WDNR

Port Quendall Project
draft - 20 June 1997

Table 2: Evaluation Guidelines for Freshwater Sediment - Chronic Bioassay Testing

Bioassay	Control Sediment	Reference Sed.	Stat. testing	Numerical guidelines SQS	Numerical guidelines CSL	Comments
amphipod - mortality endpoint *(H. azteca, day 0 to day 28)*	<20% absolute mean mort.	<30% absolute mean mort.	t-test ($p \leq 0.05$)	mean mortality ≥ 10% higher than reference	mean mortality ≥ 15% higher than reference	Each of these endpoints will be considered in the interpretation of the overall amphipod test results. If any or all endpoints fail SQS criteria, this constitutes a single SQS-level failure.
amphipod - growth endpoint *(H azteca, day 0 to day 28)*	<20% absolute mean mort.	<30% absolute mean mort.	~~two-tailed~~ t-test with appropriate adjustments, ($p \leq 0.05$)	mean biomass reduction of <30% relative to reference sediment	mean biomass reduction of <50% relative to reference sediment	
amphipod - reproductive endpoint (i.e. #neonates per surviving female; *H. azteca, day 28 to day 42*)	<20% absolute mean mort.	<30% absolute mean mort.	~~two-tailed~~ t-test with appropriate adjustments, ($p \leq 0.05$)	mean neonate production of <20% relative to reference sediment	mean neonate production of <30% relative to reference sediment	These values will be based on complete life cycle data from labs culturing these organisms over a long period.
midge - mortality endpoint *(C. tentans, 21 day test)*	<30% absolute mean mort.and mean wt. per surviving organism of 0.6 mg	<35% absolute mean mort.	t-test ($p \leq 0.05$)	mean mortality ≥ 10% higher than reference	mean mortality ≥ 20% higher than reference	Both acute endpoints will be considered in the interpretation of the overall midge test results. If either or both endpoints fail SQS guidelines, this constitutes a single SQS-level failure.
midge - growth endpoint *(C. tentans, 21 day test)*	<30% absolute mean mort.and mean wt. per surviving organism of 0.6 mg	<35% absolute mean mort.	~~two-tailed~~ t-test with appropriate adjustments, ($p \leq 0.05$)	mean biomass reduction of <30% relative to reference sediment	mean biomass reduction of <50% relative to reference sediment	
Microtox - bioluminescence endpoint *(P. phosphoreum, 15 min. test)*	NA	blank-corrected light decrease (BLD)	NA	80% reduction or $BLD_R \geq 20\%$	NA	

These freshwater guidelines reflect the information available at the time of preparation.
In the absence of freshwater sediment standards, the regulatory agencies will use BPJ in conducting test interpretation.

Port Quendall Project
draft - 20 June 1997

Table 1: Evaluation Guidelines for Freshwater Sediment - Acute Bioassay Testing

				Numerical guidelines		
Bioassay	**Control Sediment**	**Reference Sed.**	**Stat. testing**	**SQS**	**CSL**	**Comments**
amphipod - mortality endpoint *(H. azteca, 10 day test)*	<20% absolute mean mort.	<30% absolute mean mort.	t-test ($p \leq 0.05$)	mean mortality ≥ 10% higher than reference	mean mortality ≥ 15% higher than reference	Growth data may be used for interpretation of mortality data.
midge - mortality endpoint *(C. tentans, 10 day test)*	<30% absolute mean mort.and mean wt. per surviving organism of 0.6 mg	<35% absolute mean mort.	t-test ($p \leq 0.05$)	mean mortality ≥ 10% higher than reference	mean mortality ≥ 20% higher than reference	Both acute endpoints will be considered in the interpretation of the overall midge test results. If either or both endpoints fail SQS guidelines, this constitutes a single SQS-level failure.
midge - growth endpoint *(C. tentans, 10 day test)*	<30% absolute mean mort.and mean wt. per surviving organism of 0.6 mg	<35% absolute mean mort.	~~two-tailed~~ t-test with appropriate adjustments ($p \leq 0.05$)	mean biomass reduction of <20% relative to reference sediment	mean biomass reduction of <40% relative to reference sediment	

These freshwater guidelines reflect the information available at the time of preparation.
In the absence of freshwater sediment standards, the regulatory agencies will use BPJ in conducting test interpretation.

fax
7098

RENTON CITY COUNCIL
Regular Meeting

June 8, 1998 Council Chambers
Monday, 7:30 p.m. Municipal Building

MINUTES

CALL TO ORDER

Mayor Jesse Tanner led the Pledge of Allegiance to the flag and called the meeting of the Renton City Council to order.

ROLL CALL OF COUNCILMEMBERS

BOB EDWARDS, Council President; RANDY CORMAN; TIMOTHY SCHLITZER; KING PARKER; DAN CLAWSON; KATHY KEOLKER-WHEELER; TONI NELSON.

CITY STAFF IN ATTENDANCE

JESSE TANNER, Mayor; JAY COVINGTON, Chief Administrative Officer; LAWRENCE J. WARREN, City Attorney; MARILYN PETERSEN, City Clerk; GREGG ZIMMERMAN, Planning/Building/Public Works Administrator; JENNIFER TOTH HENNING, Senior Planner; LEE HARO, Transportation Planning Supervisor; STEPHEN ROLLE, Civil Engineer; DEREK TODD, Finance Analyst II; COMMANDER FLOYD ELDRIDGE, Police Department.

PRESS

Denis Law, *Renton Reporter*
Elizabeth Parker, *Renton Reporter*
Claire Booth, *South County Journal*

APPROVAL OF COUNCIL MINUTES

MOVED BY EDWARDS, SECONDED BY PARKER, COUNCIL APPROVE THE MINUTES OF JUNE 1, 1998, AS PRESENTED. CARRIED.

APPEAL
Planning & Development Committee
Appeal Western Wireless Monopole @ Shurgard Site (AAD-97-149, CU-97-092)

Planning & Development Committee Chair Keolker-Wheeler presented a report regarding the appeal of the administrative conditional use permit for Western Wireless (File No. AAD-97-149, CU-97-092). On June 4, the Committee convened to consider the appeal of the Western Wireless Monopole II at the Shurgard site located at 1755 NE 48th Street. The applicant seeks to construct a Monopole II in the southeast corner of the subject location. Western Wireless is licensed to provide personal communication service. The proposed Monopole II will facilitate that service. The Monopole II will have a height of 85 feet, with a total of 12 panel antennas mounted on top of the structure (which will add 15 feet to the height of the Monopole II, for an overall height of 100 feet above ground level).

The Zoning Administrator determined that an administrative conditional use permit should be approved. That decision was appealed to the Hearing Examiner. That first appeal was remanded to the Zoning Administrator in December of 1997. Once again, the Zoning Administrator approved the conditional use permit. An appeal was filed a second time with the Hearing Examiner. Martin Seelig appealed the decision of the Zoning Administrator, claiming that the Monopole II should not be sited at the Shurgard location. Seelig and other neighboring property owners complained that this Monopole

II would reduce their property values due to the impairment of their views. Further, they complained that this area had its fair share of communication antennas, as the Shurgard site already had numerous lower profile antennas. The Hearing Examiner ruled in his decision of April 13, 1998, to reverse the decision of the Zoning Administrator and deny the conditional use permit. This appeal followed.

The City's Wireless Communications Ordinance permits Monopole II structures as a conditional use in the Commercial Arterial (CA) zone, but prohibits their location within 300 feet of residentially-zoned parcels. The proposed Monopole II will be located at the Shurgard storage site, which is zoned CA.

The adjoining property to the east (the Seelig property) is also zoned CA and could be developed with a retail, commercial or service use. That property is rectangular in shape and is 330 feet in width and approximately 660 feet in length.

Given the height of the proposed Monopole II, it is anticipated that one or two additional carriers could co-locate. Additionally, given the height and proximity to the airport, staff noted that FAA approval would be required for construction of the Monopole II.

Whether the FAA would require a light atop the Monopole II was unknown. Prior to the approval of the conditional use permit by the Zoning Administrator, Western Wireless had applied to the FAA for approval for construction of this Monopole II. It subsequently withdrew the application to the FAA and represented to the Zoning Administrator and the Hearing Examiner that the FAA would not require a light, based on information they had from a consultant.

The Committee considered the City's policies regarding the location of the telecommunication towers. The members of the Committee reaffirmed the City's policy to provide opportunity for the public to be served by the particular service provided by this Monopole II, personal communications service. These types of monopoles need to be located within three miles of each other to carry the signal without interruption. Further, the Committee considered the City's stated policy to have towers constructed to facilitate co-location by multiple carriers. This proposal serves that policy.

The Committee considered the fact that this is an appeal of an appeal. The Hearing Examiner's role was to sit in an appellate capacity when reviewing the decision of the Zoning Administrator. In that capacity he is not to convene the hearing anew (*de novo*). Rather, he is required to give deference to the decision of the Zoning Administrator and reverse that decision only if he found one of the provisions of RCC 4-8-11-B(4) applied. There is no such finding in the record.

The Committee found that the Hearing Examiner committed a substantial error of law. The Hearing Examiner did not give proper deference to the decision of the Zoning Administrator. Rather, he substituted his judgment for that of the Zoning Administrator. Having considered the evidence *de novo* he used an improper standard when considering the decision of the Zoning Administrator.

The Committee recommended that the Council reverse the decision of the Hearing Examiner. Further, the Committee recommended that the conditional use permit be granted with the following condition: The proposed Monopole

II shall be constructed without a light on the tower, consistent with testimony from Western Wireless contained in the record. If the FAA requires a light on the pole, the conditional use permit is null and void. In the event the conditional use permit is rendered void, Western Wireless may re-apply for a conditional use permit with the new information regarding the FAA requirement. MOVED BY KEOLKER-WHEELER, SECONDED BY CLAWSON, COUNCIL CONCUR IN THE COMMITTEE REPORT. CARRIED.

ADMINISTRATIVE REPORT

Chief Administrative Officer Jay Covington reviewed a written administrative report summarizing the City's recent progress towards goals and work programs adopted as part of its business plan for 1998 and beyond. Items noted included:

* The Department of Fisheries approved an $800,000 escrow account required as part of the mitigation elements for the hydraulic permit which is needed for the Cedar River flood control project.
* The apparent high bid for the river dredge spoil materials is $718,117.50. The material will be stockpiled at the Narco site until August 31, 1998.

AUDIENCE COMMENT

Citizen Comment Richter - Veterans Memorial Proposal

Marjorie Richter, 300 Meadow Ave. N., Renton, 98055, proposed that the City allow the establishment of a veterans memorial at the 3rd and Main St. site formerly occupied by the Holms building, next door to the Renton Historical Museum. Mrs. Richter said numerous groups such as the Veterans of Foreign Wars, Citizens for Piazza Renton, Allied Arts, and the Renton Historical Society support this proposal. Adding that such a project would give service people their long-delayed thanks, she hoped it could be completed by Renton's 2001 Centennial celebration.

Citizen Comment Henning - Sikh Temple Amplification of Services

Virginia Henning, 407 S. 51st Ct., Renton, 98055, complained about the amplification of services at the Sikh Temple on Talbot Hill, saying that the noise is a problem particularly on Sundays beginning early in the morning and continuing all day long. She asked if anything could be done about the speakers used to conduct services at this location.

Mayor Tanner agreed to look into this matter.

Citizen Comment Magula - Western Wireless Communication Tower at Shurgard Site

Michael Magula, 7917 - 111th Pl. SE, Newcastle, 98056, described how the view westward from his property will be negatively affected by the new Western Wireless communication tower to be installed on the Shurgard site. Using a photo simulation to show how the tower will appear from his property, Mr. Magula said that the issuance of the conditional use permit for this tower is contrary to certain provisions of Renton's Comprehensive Plan and to City regulations governing wireless communications facilities. Specifically, the tower will not be "sensitively sited," and photo simulations were not provided as required. Although Council has decided to allow this tower to be constructed, Mr. Magula hoped that other property owners will not be subjected to this type of

situation in the future.

Councilman Corman replied that while he was sympathetic to Mr. Magula's plight, federal law greatly restricts the City's ability to disallow communication towers. All Renton can do as a municipality is try to reduce the impacts as much as possible.

Citizen Comment DuBois - Quendall Terminals Purchase & Cleanup

Pegi DuBois, 2907 Mountain View Ave. N., Renton, 98056, asked for additional information on the City's plans to acquire and clean up the Quendall Terminals property on Lake Washington. Mayor Tanner offered to provide Ms. DuBois with the press packet on this subject.

Citizen Comment Darst - Veterans Memorial Proposal

Pat Darst, 2601 Edmonds Ave. NE, Renton, 98056, concurred in the proposal outlined earlier by Mrs. Richter that the City use the now-vacant Holms building site for a veterans memorial to honor all who have served their country.

MOVED BY CORMAN, SECONDED BY PARKER, COUNCIL REFER THIS MATTER TO THE COMMUNITY SERVICES COMMITTEE. CARRIED.

Citizen Comment Painter - Peddler's License for Ice Cream Trucks

John Painter, 537 Smithers Ave. S., Renton, 98055, expressed concern that operators of ice cream trucks need only purchase a business license to operate in the City of Renton. He suggested that these types of businesses instead be required to obtain a peddler's license, which would ensure a background check of each applicant and also require that all vehicles used for solicitations and sales clearly identify the business.

MOVED BY CLAWSON, SECONDED BY PARKER, COUNCIL REFER THIS MATTER TO THE ADMINISTRATION AND THE FINANCE COMMITTEE. CARRIED.

CONSENT AGENDA

Items on the consent agenda are adopted by one motion which follows the listing.

CAG 98-068, NW 7th St Sewer Replacement, Snelson Co

City Clerk reported bid opening on 6/02/98 for CAG-98-068, NW 7th Street Sewer Replacement (Directional Drill); two bids; engineer's estimate $180,83.25; and submitted staff recommendation to award the contract to the low bidder, Snelson Companies, Inc., in the total amount of $145,694.50. Council concur.

Finance Audit Program for Misdirected or Uncollected Tax & Fee Revenues

Finance and Information Services Department recommended instituting an audit program to recover misdirected and/or uncollected tax and fee revenue due to the City. Refer to Finance Committee.

Public Works SR-167 Culvert Construction, WSDOT Funding (CAG-98-

Surface Water Utility Division recommended approval of a state participation agreement in the amount of $85,000 with the Washington State Department of Transportation (WSDOT) for the SR-167 (84th Ave. S. to Grady Way) culvert construction project. Council concur. (See page 203 for resolution.)

MOVED BY EDWARDS, SECONDED BY PARKER, COUNCIL APPROVE THE CONSENT AGENDA AS PRESENTED. CARRIED.

CORRESPONDENCE

Executive Adult Retail Outlet Location Restrictions

Correspondence was read from Mayor Tanner to the City Council reporting that according to the City Attorney's Office, evidence exists of negative secondary effects related to adult retail outlets. As these negative secondary effects are inconsistent with the City's plans to upgrade its business core and residential districts, he suggested that the City embark upon the process to regulate the location of these businesses in Renton. MOVED BY EDWARDS, SECONDED BY NELSON, COUNCIL REFER THIS ITEM TO THE PLANNING & DEVELOPMENT COMMITTEE. CARRIED.

Citizen Comment HR&RM - Local #2170 Concern re Non-Regular Employees

Correspondence was read from the Washington State Council of County and City Employees Local #2170, PO Box 750, Everett, 98206, expressing concern over the increasing use of limited term and other non-regular employees by the City. MOVED BY EDWARDS, SECONDED BY KEOLKER-WHEELER, COUNCIL REFER THIS MATTER TO THE ADMINISTRATION AND THE COMMITTEE OF THE WHOLE FOR INCLUSION IN BUDGET DELIBERATIONS.*

Mayor Tanner emphasized that the positions referred to (in the Development Services Division) are regular, though limited in term. This means that the persons hired for them will receive full City benefits. He committed to making these positions permanent after two years, should they still be needed at that time.

Responding to Councilman Corman, Mayor Tanner said since these positions are not now permanent in nature, they are not eligible for union membership. He agreed that this was a valid negotiating point that the union can raise during the next bargaining talks.

*MOTION CARRIED.

Citizen Comment Darst - Veterans Memorial Proposal

Correspondence was read from Pat Darst, 2601 Edmonds Ave. NE, Renton, 98056, regarding the proposed veterans memorial. MOVED BY NELSON, SECONDED BY CORMAN, COUNCIL REFER THIS LETTER TO THE COMMUNITY SERVICES COMMITTEE. CARRIED.

OLD BUSINESS

Committee of the Whole

Council Quendall Terminals Acquisition and Cleanup

Council President Edwards presented a report recommending that Council authorize the Administration to sign the purchase and sale agreement with Altino Properties and J.H. Baxter Co. and investigate the feasibility of taking title to the Quendall Terminals property for the purpose of cleaning up the property and restoring it to a usable site. It is understood that final action on this matter will be brought back to Council after all of the contingencies have been investigated and a risk assessment has been completed. The Committee further recommended that Council appropriate $218,370 for this project in the 1998 fiscal year. $107,500 will be included

in the Administration's proposed 1999 budget. MOVED BY EDWARDS, SECONDED BY PARKER, COUNCIL CONCUR IN THE COMMITTEE REPORT. CARRIED.

Transportation Committee

Transportation N 30th St/Park Ave N Preliminary Sidewalk Design, H.W. Lochner, Inc., CAG-98-

Transportation (Aviation) Committee Chair Schlitzer presented a report recommending that Council authorize the Mayor to execute a task order agreement with H.W. Lochner, Inc. to conduct design of the North 30th Street and Park Avenue North walkway project. This project is a budgeted item under the City's Walkway Program (TIP Project #5). MOVED BY SCHLITZER, SECONDED BY CORMAN, COUNCIL CONCUR IN THE COMMITTEE REPORT. CARRIED.

Transportation Renton Urban Shuttle (RUSH) Service

Transportation (Aviation) Committee Chair Schlitzer presented a report recommending that Council support the continued operation of the RUSH shuttle under the current operating characteristics. To continue RUSH operations, the Committee recommended that Council direct Staff to work with the King County Department of Transportation (Metro) to develop an operating agreement for continued RUSH operations for a two-year period. MOVED BY SCHLITZER, SECONDED BY KEOLKER-WHEELER, COUNCIL CONCUR IN THE COMMITTEE REPORT. CARRIED.

Transportation Six-Year TIP, 1998-2004

Transportation (Aviation) Committee Chair Schlitzer presented a report regarding the 1998-2004 Six-Year Transportation Improvement Program (TIP). The Committee has reviewed the proposed TIP and the associated mid-year budget adjustments, and recommended that a public hearing be held on June 22, 1998 to consider adoption. MOVED BY SCHLITZER, SECONDED BY CORMAN, COUNCIL CONCUR IN THE COMMITTEE REPORT. CARRIED.

Finance Committee

Transportation Program Development Coordinator I Step Change

Finance Committee Chair Parker presented a report recommending that Council approve the Transportation System Division's request to fill the vacant Program Development Coordinator position at Step E of the salary range. MOVED BY PARKER, SECONDED BY NELSON, COUNCIL CONCUR IN THE COMMITTEE REPORT. CARRIED.

Transportation Civil Engineer II Step Change

Finance Committee Chair Parker presented a report recommending that Council approve the Transportation System Division's request to fill the vacant Civil Engineer II position at Step E of the salary range. MOVED BY PARKER, SECONDED BY CORMAN, COUNCIL CONCUR IN THE COMMITTEE REPORT. CARRIED.

Development Services New Positions (Two Inspectors)

Finance Committee Chair Parker presented a report regarding the request from the Building and Code Compliance sections of the Development Services Division for two full-time, limited term employees. The first position is a Plans Examiner/Combination Inspector at Grade 18, Step C, and the second position is a Land Use

Compliance Inspector, also at Grade 18, Step C. Both positions are requested for approximately one and one-half years, through the end of 1999. The addition of these limited term employees will allow the sections to maintain a current level of efficiency and productivity, as they have been faced with increased work volumes. The amount required to retain these employees is $124,100 plus automobiles, which includes salary and benefits for the duration of their tenure. MOVED BY PARKER, SECONDED BY CORMAN, COUNCIL CONCUR IN THE COMMITTEE REPORT. CARRIED.

Finance Vouchers

Finance Committee Chair Parker presented a report recommending approval of Claims Vouchers #159892 - 160338 in the amount of $2,412,252.13; and approval of Payroll Vouchers #160048 - 160339 and 503 direct deposits in the total amount of $1,289,617.02. MOVED BY PARKER, SECONDED BY NELSON, COUNCIL CONCUR IN THE COMMITTEE REPORT. CARRIED.

HR&RM 1998 Renewal of Service Broker Agreements

Finance Committee Chair Parker presented a report recommending concurrence in the staff recommendation to renew services of broker agreements for The Charles Group, Inc., Arthur J. Gallagher & Co. (Denver), and Giesy, Greer & Gunn, Inc. for 1998. MOVED BY PARKER, SECONDED BY KEOLKER-WHEELER, COUNCIL CONCUR IN THE COMMITTEE REPORT. CARRIED.

Public Works Sidewalk Construction/Restoration Funding Allocation

Finance Committee Chair Parker presented a report recommending concurrence in the staff recommendation that Council approve the use of $250,000 of Fund 215 (General Governmental Miscellaneous Debt) money for the purpose of restoring and repairing existing sidewalks and building new sidewalks in residential areas that currently do not have sidewalks. This action would provide supplemental funding for the Neighborhood Sidewalk Program, and enable sidewalk improvements to be constructed in neighborhoods throughout the City.

Previously approved funding for Phase I of the 1998 Neighborhood Sidewalk Program will be primarily dedicated to sidewalk improvements requested by the Highlands Neighborhood Group, and to perform the design of new sidewalks for Park Ave. from N. 28th St. to N. 38th St., and along N. 30th St. from Burnett Ave. N. to I-405 in Kennydale.

The currently proposed funding for Phase II of the 1998 Neighborhood Sidewalk Program will be used to supplement a Transportation Improvement Board grant of $100,000 to construct the previously-mentioned sidewalks along Park Ave. and N. 30th St. in Kennydale (construction to be done in 1999), and for rehabilitation and repair of sidewalks that pose a safety risk to pedestrians in the Rolling Hills, Tiffany Park and Victoria Park neighborhoods. MOVED BY PARKER, SECONDED BY

KEOLKER-WHEELER, COUNCIL CONCUR IN THE COMMITTEE REPORT. CARRIED.

EDNSP Pavilion Building Improvements

Finance Committee Chair Parker presented a report recommending concurrence in the recommendation of the Economic Development, Neighborhoods and Strategic Planning Department in the appropriation of $200,000 from the unallocated fund balance in reserve for the piazza project to complete necessary improvements to the Pavilion building. The Committee further recommended that the ordinance regarding this matter be presented for first reading. MOVED BY PARKER, SECONDED BY KEOLKER-WHEELER, COUNCIL CONCUR IN THE COMMITTEE REPORT. CARRIED. (See page 203 for ordinance.)

Utilities Committee
Utility Seattle Water Franchise Agreement, CAG-98-

Utilities Committee Chair Clawson presented a report concurring in the staff recommendation to approve three documents: an interlocal agreement; an agreement for the transfer of water service from the City of Seattle to the City of Renton to serve Boeing; and a water purveyor contract between the City of Seattle and the City of Renton for the sale of wholesale water and emergency water supply by Seattle to Renton.

The Committee recognized that more work needs to be done in regard to the fourth document, a lease agreement. Staff is still negotiating item #2 of this agreement (titled "Renton's Use of the Leased Land") with the aim of altering the language to secure Renton's use of the surface of Seattle's Cedar River pipeline for the proposed public piazza park and the public parking lot including access to the Dally development located north of S. 3rd Street and between Burnett and Morris Avenues South. Provision 3.2 of the lease agreement must be revised to remove Renton's obligation to provide written agreements to Seattle indicating the current leaseholders' willingness to relinquish the leases. Seattle's right to terminate the lease at its sole discretion, as provided in item 15.2 of the lease agreement, will also require revision. Conditioned upon satisfactory resolution of these items, the Utilities Committee recommended concurrence in the staff recommendation to approve this lease agreement as well.

The Committee further recommended that the Mayor and City Clerk be authorized to execute these agreements upon their approval by the City Attorney and satisfactory revision of the lease agreement as previously described. The Committee further recommended that upon approval of the City Attorney and satisfactory revision of the lease agreement, the resolution regarding these agreements be presented for reading and adoption.

The Committee noted that it is important to conclude this process and implement the agreements by August 1, 1998, or as soon as both Seattle and Renton pass their respective legislation accepting the agreements. Staff reports that this date is realistic and achievable. Seattle is progressing with approval of the documents to meet this timeline as well.

MOVED BY CLAWSON, SECONDED BY SCHLITZER, COUNCIL CONCUR IN THE COMMITTEE REPORT. CARRIED.

Planning & Development Committee
Council Suburban Cities Questionnaire

Planning & Development Committee Chair Keolker-Wheeler presented a report regarding the Suburban Cities Survey. The Committee reviewed the survey information to be provided to the Suburban Cities Association (SCA) regarding regional finance and governance issues. The Committee proposed some minor modifications and additions to the Administration. These modifications and additions were included in the final draft of the survey that was delivered along with a signed cover letter to the SCA on Friday, June 5, 1998. The cover letter was signed by both the Mayor and the Council President. MOVED BY KEOLKER-WHEELER, SECONDED BY CORMAN, COUNCIL CONCUR IN THE COMMITTEE REPORT. CARRIED.

Community Services Committee
Executive Special Events/Volunteer Coordinator, Sonja Mejlaender, CAG-98-

Community Services Committee Chair Nelson presented a report regarding the recommendation of the Executive Department that the contract of the volunteer coordinator be combined with that of special events coordination for one 12-month contract for services in the amount of $45,000. The Committee recommended concurrence in the staff recommendation to approve this contract for volunteer/special events coordination services with Sonja Mejlaender. The Committee further recommended that the contract be managed by the Community Relations Specialist in the Executive Department. MOVED BY NELSON, SECONDED BY CLAWSON, COUNCIL CONCUR IN THE COMMITTEE REPORT. CARRIED.

ORDINANCES AND RESOLUTIONS

The following resolutions were presented for reading and adoption:

Resolution #3329
Streets Monster Road Bridge Temporary Closure (Monster Rd SW to SR-900)

A resolution was read authorizing the temporary closure of the Monster Road bridge between Monster Road SW and SR-900 (Martin Luther King, Jr. Way) for roadway construction. MOVED BY EDWARDS, SECONDED BY CORMAN, COUNCIL ADOPT THE RESOLUTION AS PRESENTED. CARRIED.

Resolution #3330
Public Works SR-167 Culvert Construction, WSDOT Funding (CAG-98-

A resolution was read authorizing the Mayor and City Clerk to enter into a state participating agreement with the Washington State Department of Transportation (WSDOT) for the SR-167 (84th Ave. S. to S. Grady Way) culvert construction project at the intersection of SR-167 and SW 23rd St., if extended. MOVED BY EDWARDS, SECONDED BY SCHLITZER, COUNCIL ADOPT THE RESOLUTION AS PRESENTED. CARRIED.

The following ordinance was presented for first reading and referred to the Council meeting of 6/15/98 for second and final reading:

EDNSP Pavilion Building Improvements

An ordinance was read providing for 1998 Budget amendments in the amount of $200,000 for capital

improvement projects (expenditures related to the downtown park area known as the Piazza). MOVED BY EDWARDS, SECONDED BY PARKER, COUNCIL REFER THE ORDINANCE FOR SECOND AND FINAL READING ON 6/15/98. CARRIED.

Ordinance #4726
Police Ordinance Outlawing Shooting Bows, Air Guns or Slingshots at Animals

An ordinance was read amending Section 6-2-2 of Chapter 2, Air Guns, of Title VI (Police Regulations) of City Code by correcting a typographical error and by adding a subsection making it unlawful for any person to shoot a bow, air gun or slingshot at any animal or fowl. MOVED BY CORMAN, SECONDED BY SCHLITZER, COUNCIL ADOPT THE ORDINANCE AS PRESENTED. ROLL CALL: ALL AYES. MOTION CARRIED.

ADJOURNMENT

MOVED BY PARKER, SECONDED BY SCHLITZER, COUNCIL ADJOURN. CARRIED. Time: 8:38 p.m.

_____
MARILYN J. PETERSEN, CMC, City Clerk

Recorder: Brenda Fritsvold
6/08/98

22-002627

WASHINGTON STATE DEPARTMENT OF
Natural Resources

JENNIFER M. BELCHER
Commissioner of Public Land

June 15, 1998

Quendall Terminals
Mr. Dean H. Brokaw
PO Box 477
Renton, WA 98057

Subject: Aquatic Resources Lease No. 22-002627 - Holdover

Dear Mr. Brokaw:

The subject lease, which expired on October 1, 1996, refers to the lease between the State, as Lessor, and Quendall Terminals, as Lessee. The lease is located at:

See enclosed legal description

It is agreed it is in the best interest of both lessor and Lessee to extend the subject lease through an infinite date, or to the commencement date of the new lease.

We are forwarding this letter to confirm our mutual agreement regarding this extension from the expiration date of Lease No. 22-002627 and Quendall Terminals's ability to remain on the premises. The extension of this lease is acceptable to the state of Washington and Quendall Terminals, with all conditions thereto remaining the same. The rent and leasehold tax (LHT) to be paid under this holdover agreement by the Lessee shall be as provided by the expired lease as if it continued.

The rent and LHT amount is $26,834.61 and an invoice with a payment due date is enclosed. The invoice shows a yearly breakdown for rent. Continued rent under the terms of this lease due after September 30, 1998 will be billed as it comes due. This rent and LHT must be paid in a timely manner as if the lease were in effect for this holdover agreement to be valid and upon timely payment will represent full payment through September 30, 1998. Late payment will also cause interest to be added to your account at one (1%) percent per month as provided by law.

SOUTH PUGET SOUND REGION ▮ 950 FARMAN ST N ▮ PO BOX 68 ▮ ENUMCLAW, WA 98022-0068
FAX: (360) 825-1672 ▮ *TTY: (360) 825-6381* ▮ *TEL: (360) 825-1631*

Finally, the bond of $7,000 and evidence of insurance required by Lease No. 22-002627 must be returned with your executed copy of this letter. The department will not approve your holdover on the premises without your continued fulfillment of the lease's bond and insurance requirement.

Please acknowledge your agreement to the above by signing this letter where provided and returning it no later than thirty (30) days from the date of this letter. Please send the rent payment to: Financial Management Division, PO Box 47041, Olympia, WA 98504-7041.

Signature of acceptance _____
Dean H. Brokaw Date

If you have any questions or concerns, please call David Bortz at (360) 825-1631.

Sincerely,

Bonnie B. Bunning
Region Manager
South Puget Sound Region

Enclosure

bc: Rick Cardoza
Mark Mauren
Region File
Aquatic Resources File

sk/Bortz/22002627.hld

EXHIBIT A

That portion of Lake Washington harbor area lying between the North and South lines produced of Lot 5, Section 29, Township 24 North, Range 5 East, W.M., Lake Washington Shorelands, containing approximately 936,126 square feet, hereinafter called the "Premises";

Subject to the following easements of record:

1. Easement to Municipality of Metropolitan Seattle for sewage right of way described as follows:

Those portions of the harbor area and bed of Lake Washington, owned by the State of Washington, situate in front of Government Lot 5, Section 29 and bed of Lake Washington, owned by the State of Washington, situate in front of Government Lots 2 and 4, Section 30, all in township 24 North, Range 5 East, W.M., included within the limits of a strip 60 feet in width, having 30 feet of such width on each side of the following described centerline:

Beginning at a point in said Government Lot 5, Section 29, which is N 45° W 1,650.0 feet from the south quarter section corner thereof, thence running N 58° 13' W 85.0 feet, thence N 39° 29' 19" W 782.0 feet, thence N 61° 58' 15" W 1797.0 feet, and thence N 87° 53'36" E 157.0 feet to a point in said Government Lot 2, Section 30 and the terminal point of this centerline description, having an area of 3.89 acres as shown on the plat thereof on file in the office of the Commissioner of Public Lands at Olympia, Washington.

2. Easement to Puget Sound Power & Light Company for submarine cables described as follows:

Those portions of the harbor area and bed of Lake Washington in front of Government Lots 4 and 5, Section 29, and the bed of lake Washington in front of Government Lot 4, Section 30, all in Township 24 North, Range 5 East, W.M., owned by the State of Washington, included within the limits of a strip 200 feet in width, having 100 feet of such width on each side of the following described centerline:

Commencing at a point on the south line of said Section 29, which is N 88° 49' 22" W 1055.79 feet from the south quarter section corner thereof and running thence N 30 53' 14" E 821.10 feet, thence N 58 14' 38" W 578.52 feet, thence N 31 45' 22" E 49.99 feet, and thence N 48° 01' 56" W 483.51 feet to a point on the inner harbor line and the true point of beginning of this centerline description, thence continuing N 48° 01' 56" W 456.00 feet, and thence N 70 42' 32" W 1978.04 feet to a point in Government Lot 4, said Section 30, which is S 73° 46' 40" E 1330.23 feet from the center of said Section 30, having an area of 11.18 acres as shown on the plat thereof on file in the office of the Commissioner of Public Lands at Olympia, Washington.

Exponent™

Exponent
15375 SE 30th Place,
Suite 250
Bellevue, WA 98007

telephone 425-643-9803
facsimile 425-643-9827
www.exponent.com

October 6, 1998

Martha Turvey
Sediment Cleanup Specialist
Toxics Cleanup Program
Washington State Department of Ecology
3190 160th Avenue SE
Bellevue, Washington 98008-5452

Subject: Sediment Standards Development for Quendall Terminals
Contract 8600BD0.001 1004

Dear Martha:

As you know, the City of Renton (City) is negotiating a Prospective Purchaser Agreement (PPA) with the Washington State Department of Ecology (Ecology) to purchase and clean up the Quendall Terminals site in Renton, Washington. The City has voluntarily entered into the PPA process to clean up the property, create a Lake Washington waterfront park, and ultimately sell the remaining upland portion of the site to a private developer for brownfield redevelopment. The remediation will be funded predominantly through grant money from Ecology's Local Toxics Account. Since the early 1970s, parties have been attempting to clean up and redevelop the Quendall Terminals site without success. The City sees this chance to clean up environmental contamination and to convert the Quendall Terminals site to a park and brownfield redevelopment as a unique opportunity.

As part of this effort, the City is preparing the Remedial Investigation/Focused Feasibility Study and Cleanup Action Plan (RI/FFS and CAP) that will be included as attachments to the PPA. As part of the ongoing effort to prepare the RI/FFS and CAP, Exponent is hereby submitting to you the section of the FFS that addresses the sediment standards to be applied at the site for preliminary review. These standards would be applicable to surface sediment remediation. Exponent recognizes that Ecology is in the process of developing sediment standards for the remediation of polycyclic aromatic hydrocarbons (PAHs) and wood waste, and that these issues are being discussed in the scientific and regulatory community. However, because of the budget and time constraints of this unique opportunity, the City needs to achieve regulatory approval for the specific approach to sediment remediation, and therefore has proposed a very conservative sediment remedial alternative. Once Ecology's initial approval is obtained, this information will be included in the FFS document.

Need more info for cost benefit decisions.

Specifically, the preferred alternative for the Quendall Terminals sediments selected in the FFS is to dredge all those offshore areas exhibiting total PAH concentrations of greater than 100 mg/kg dry weight, and to dredge all those areas exhibiting wood waste greater than 50 percent. In addition to re-filling the area where PAH-contaminated sediments are removed with clean sediment, the wood waste gray zone will be capped with 6 in. of clean sediment. This additional capping, which essentially covers the entire site, is intended to address any remaining wood waste that may cause adverse biological effects.

If the PPA is successfully implemented by June 1, 1999, the City will perform additional toxicity testing, with Ecology's input, of the wood waste gray zone areas to confirm whether or not the extensive capping program is required. If this sampling indicates that the wood waste gray zone areas are not causing adverse effects on the benthic communities, then the area to be capped could be reduced. However, to be conservative and to provide reasonable certainty for the protection of actual remediation costs, the City has prepared the FFS under the assumption that all the gray zone sediments will be capped.

The City is requesting Ecology's expedited review of the attached draft RI/FFS section addressing the determination of sediment standards. Because of the accelerated time schedule, the City, with Ecology's input, is submitting draft sections of the document to receive feedback prior to submittal of the entire draft RI/FFS and CAP to Ecology on November 16, 1998.

The City appreciates Ecology's assistance in this preliminary review. If you have any questions please feel free to call Tom Redd or me at (425) 643-9803.

Sincerely,

Thomas Redd for

Shawn R.T. Severn, Ph.D.
Principal
Environmental Group

cc: Susan Carlson, City of Renton
Bill Joyce, Ogden Murphy Wallace
Tom Morrill, Washington State Assistant Attorney General
Rick Huey, Washington State Department of Ecology
Brian Sato, Washington State Department of Ecology

SEDIMENTS

The constituents of concern in the sediments offshore of the Quendall Terminals site consist of polycyclic aromatic hydrocarbon (PAH) compounds and residual wood wastes. Sediment cleanup under Washington State's Model Toxics Control Act (MTCA) is regulated by the Sediment Management Standards (SMS), promulgated under the Washington Administrative Code (WAC) Chapter 173-204. The SMS establish sediment quality standards, source control standards, and sediment cleanup standards to be applied in state-led remedial actions. While the SMS provide chemical concentration criteria and biological effects criteria for evaluation of marine sediments, the freshwater sediment quality standards have been reserved, pending development of criteria specific to the protection of freshwater biota (WAC 173-204-340). The SMS empower the Washington State Department of Ecology (Ecology) to develop sediment criteria, methods, and procedures necessary to meet the intent of the SMS. The following discussion summarizes the site-specific sediment cleanup levels developed with Ecology and other resource agencies for sediments offshore of the Quendall Terminals site.

SEDIMENT QUALITY STANDARDS

Sediment Quality Standards (SQS) under the SMS correspond to sediment quality that will result in no adverse effects, including acute or chronic adverse effects on biological resources and human health (WAC 173-204-320). Ecology has used the Apparent Effects Threshold (AET) approach to establish marine sediment quality values protective of biological resources. An AET is defined as the sediment concentration of a given chemical above which a particular adverse biological effect is expected to be statistically significant ($P<0.05$), relative to appropriate reference conditions (Barrick and Beller 1988). Examples of adverse biological effects include depression in the abundance of indigenous benthic infauna, or acute or chronic toxicity to organisms exposed to

contaminated sediments in a standard toxicity test. The establishment of an AET requires a data set of synoptically collected chemical and toxicity test data over a broad range of concentrations of the constituent of interest. Although Ecology has developed freshwater sediment AETs, they have not been proposed as the basis for freshwater sediment chemical criteria (Ecology 1997).

To conform with state standards and the intent of the SMS, a sediment cleanup value for total PAHs was developed for the Quendall Terminals site sediments following the AET approach. Because wood waste is not amenable to a similar approach under the SMS, however, Ecology may designate excessive wood waste as "other deleterious substances," and can require cleanup on a case-by-case basis (WAC 173-204-520(5)). At Ecology's discretion, the cleanup criterion for wood waste may be established based on specific site conditions.

Total Polycyclic Aromatic Hydrocarbons

A site-specific AET for total PAHs was determined by RETEC (1997) using paired sediment chemistry and toxicity test data from earlier studies conducted by Ecology at the Quendall Terminals site. The sediment toxicity tests were conducted by Ecology using *Hyalella azteca*, *Daphnia magna*, *Ceriodaphnia dubia*, *Chironomus tentans* (acute and chronic exposures), and Microtox. Using the results from these tests, RETEC (1997) calculated AETs for each test endpoint.

The only tests for which it was possible to determine a discrete AET value were the acute *Hyalella azteca* test and the Microtox test. The acute *Hyalella azteca* test demonstrated the most consistent dose-response relationship for total PAHs, and yielded an AET for total PAHs of 128 mg/kg dry weight. Because the data set did not include other sediment samples with total PAH concentrations close to this value (i.e., the sample with the next lowest concentration, 29.2 mg/kg dry weight, did not cause significant toxicity; the sample with the next highest concentration, 345 mg/kg dry weight, did cause significant

toxicity) there is some uncertainty associated with this AET value. If other sediment samples had been available within this concentration range, the only possible effect would have been to raise the AET value (i.e., for a sample with a total PAH concentration lower than 128 mg/kg dry weight, the result for the sample with 128 mg/kg dry weight would still have set the AET; for a sample with a total PAH concentration greater than 128 mg/kg dry weight, a finding of significant toxicity would not have changed the AET, but a finding of no effect would have caused that sample to set the AET). The Microtox test was more sensitive (i.e., the AET value was lower, 29.2 mg/kg dry weight). However, although recommended for screening purposes, the Microtox test is generally not used by Ecology in establishing sediment cleanup values because of its extreme sensitivity.

The Quendall Terminals site AET for total PAHs is conservative when compared with the freshwater sediment AETs developed by Ecology (1997) using data from a variety of studies. The AETs reported by Ecology (1997) for total PAHs were 700 mg/kg dry weight for *Hyalella azteca* (based on 138 sediment samples) and 170 mg/kg dry weight for Microtox (based on 25 sediment samples). Thus, the AET for total PAHs developed for the Quendall Terminals site (128 mg/kg dry weight) was lower than either of the AETs developed by Ecology (1997) using a much larger database. This suggests that the site-specific 128 mg/kg dry weight AET is a conservative (i.e., environmentally protective) estimate of a "no adverse effects" level for evaluation of sediment contamination at the Quendall Terminals site. As a result of negotiations with Ecology, it was decided to introduce a further degree of conservatism by selecting a site-specific cleanup value for total PAHs lower than the AET value. This site-specific cleanup value (100 mg/kg dry weight total PAH) has been accepted by Ecology (Turvey 1997a, pers. comm.). Accordingly, it is expected that sediments containing a total PAH concentration above this value will require remediation.

To put this site-specific cleanup value into context, it should be recognized that the marine sediment standards of the SMS contain two sets of chemical criteria. The SQS values, as indicated earlier, essentially represent "no adverse effects" criteria. Another

set of chemical criteria, the cleanup screening levels (CSL), are generally higher than the SQS values and are used for determining whether sediments are sufficiently contaminated to require remediation. Although Ecology has not yet promulgated freshwater sediment criteria, it can be assumed by analogy with the marine sediment standards that a similar two-tier criteria system would be appropriate.

In the absence of promulgated freshwater sediment criteria, Ecology (1997) has suggested two possibilities for generating "no adverse effects" criteria for evaluating freshwater sediments. These are the lowest AET (LAET) value from the *Hyalella azteca* and Microtox data sets or the probable apparent effects threshold (PAET) value (defined as the 95th percentile of the "no hit" concentrations above the lowest "hit" concentration for either the *Hyalella azteca* or Microtox data sets). For total PAHs, the LAET value is 170 mg/kg dry weight and the PAET value is 60 mg/kg dry weight. Thus, the site-specific cleanup value for the Quendall Terminals sediments (100 mg/kg dry weight) is approximately midway between these two values. There has been no attempt to define criteria for freshwater sediments representative of a CSL. By analogy with the marine sediment standards, however, it could be expected that a value representative of a CSL for freshwater sediments would be higher than these essentially "no adverse effects" levels. Hence, the site-specific cleanup value for total PAHs in the Quendall Terminals sediments (100 mg/kg dry weight) should provide a high degree of environmental protection. Sediments containing total PAH concentrations above this value will be excavated, treated thermally either onsite or offsite, and disposed of.

Wood Waste

A joint position paper on wood waste was recently released by the U.S. Army Corps of Engineers and Ecology (Kendall and Michelsen 1997). The paper states that under the SMS, Ecology is not proposing specific numerical standards for wood waste (i.e., such as a criterion for total organic carbon content), but rather will determine site-specific cleanup requirements for wood waste based on toxicity test results.

PSDDA + SMS Tech memo

For Quendall Terminals, the applicant and the resource agencies agreed that sediments with wood waste concentrations greater than 50 percent, as defined by Sediment Vertical Profile Imaging and video transects, would be removed by dredging without further biological testing. However, for sediments having less than 50 percent wood waste, it was agreed that the current assumption is that these sediments would be capped and that toxicity testing will be performed in the summer of 1999 to determine whether sediments are causing significant deleterious effects and whether the area to be capped could be reduced based upon the test results.

COMPARISON OF SITE SEDIMENT CONDITIONS TO SEDIMENT CLEANUP VALUES

This section discusses the areas where sediment cleanup values are exceeded, and defines areas requiring remediation based on comparisons with site-specific cleanup values.

Total Polycyclic Aromatic Hydrocarbons

There are two areas with shallow sediments whose total PAH concentrations exceeded the site-specific cleanup level (100 mg/kg dry weight) (Figure ___): offshore sediments at the end of the T-dock and nearshore sediments at the foot of the T-dock. Offshore sediments with total PAH concentrations above the cleanup level were generally found between the surface and 3.5 ft below the mudline. Nearshore sediments at the foot of the T-dock were found to exceed the cleanup level down to 1.5 ft below the mudline.

Two areas of deep contamination were detected during Phase 2 sampling. The first of these was located within the area of nearshore PAH contamination at the foot of the T-dock. Subsurface areas to the north of the T-dock were found to contain dense non-aqueous phase liquid (DNAPL) between 2 and 10 ft below the mudline at Station VS-30,

and between 16.5 and 17 ft below the mudline at Station VS-4(1) farther offshore. These two areas of deep contamination will be addressed as part of the upland remediation.

Wood Waste

The extent of wood waste in sediments offshore of the Quendall Terminals site was evaluated during RETEC's Phase 1 and Phase 2 investigations using a combination of Sediment Vertical Profile Imaging and video transects. The principal area of sediments containing greater than 50 percent wood waste was identified as an area of approximately 18,750 yd^2 located offshore of the Quendall log dump (Figure ____). In this area, the logs will be removed and sediments containing greater than 50 percent wood waste will be dredged and disposed of offsite.

Areas where the sediments contain less than 50 percent wood waste are indicated as gray hashmarks in Figure ___. Within this "gray zone," RETEC conducted acute and chronic toxicity tests to determine if there were any deleterious effects associated with the wood waste.

RETEC conducted three different toxicity tests with "gray zone" sediments: 1) a 10-day acute toxicity test using the midge *Chironomus tentans*, with mortality and weight gain endpoints; 2) a 10-day acute toxicity test using the amphipod *Hyalella azteca*, with mortality and weight gain endpoints; and 3) a 42-day chronic toxicity test using the amphipod *Hyalella azteca*, with mortality and reproduction endpoints. All of the tests represent whole-sediment toxicity tests. After only 28 days in the 42-day toxicity test, the survival of *Hyalella azteca* was poor for both control and reference sediments (32.5 percent and 49.2 percent survival, respectively). Consequently, the test was terminated.

The results of the toxicity tests indicate that wood waste materials in the gray zone are not causing acute toxic effects. The chronic toxicity tests were inconclusive because of the high mortality in the control and reference samples. Therefore, Ecology will require a

valid chronic toxicity test to complete the evaluation of the toxicity of sediments having wood waste concentrations of less than 50 percent. This information may be used in the future to determine whether a reduced capping area in the gray zone would still be protective.

2 acute
1 chronic

SUMMARY

Sediments offshore of the Quendall Terminals site that have total PAH concentrations exceeding the sediment cleanup level developed for this site (100 mg/kg dry weight) will be dredged and disposed of offsite. In areas that were found to have accumulations of logs and other wood waste in the sediments at concentrations of greater than 50 percent, the logs will first be removed and then the sediments with high wood waste content will be dredged and disposed of offsite. To provide the most conservative remediation for the sediments, the present plan is for the entire "gray zone" (i.e., that area with elevated wood waste in the sediments, but at concentrations of less than 50 percent) to be capped with clean sediments, thereby eliminating exposure of aquatic organisms to sediments containing total PAH concentrations of less than 100 mg/kg dry weight, and restoring the benthic habitat to a more natural condition than is now present with the high concentrations of wood waste. It is expected that additional testing of the sediments in the "gray zone" will be conducted prior to implementation of the cap. The goal of such testing will be to refine the spatial extent of sediments requiring remediation, and potentially reduce the area of the gray zone that requires capping.

REFERENCES

Barrick, B., and H. Beller. 1988. What is an AET? Puget Sound Notes.

Ecology. 1995. WAC 173-204. Sediment Management Standards. Washington State Department of Ecology, Olympia, WA.

Ecology. 1997. Creation and analysis of freshwater sediment quality values in Washington State. Publication No. 97-323a. Washington State Department of Ecology, Olympia, WA.

Kendall, D., and T. Michelsen. 1997. Management of woodwaste under dredged material management programs (DMMP) and the Sediment management standards (SMS) cleanup program. DMMP Issue Paper, 1997 Sediment Management Annual Review Meeting.

RETEC. 1997. Proposed cleanup levels for the Port Quendall sediments. Technical memorandum (April 22, 1997). RETEC, Seattle, WA.

Turvey, M. 1997a. Personal communication (letter to T. Thompson, RETEC, Seattle, WA, regarding RETEC's May 2, 1997, memorandum). Washington State Department of Ecology, Toxics Cleanup Program, Northwest Regional Office, Bellevue, WA.

Turvey, M. 1997b. Personal communication (letter to J. Ryan, RETEC, Seattle, WA, regarding draft evaluation guidelines for acute and chronic bioassay testing in Port Quendall sediments). Washington State Department of Ecology, Toxics Cleanup Program, Northwest Regional Office, Bellevue, WA.

U.S. EPA. 1994. Methods for measuring toxicity and bioaccumulation of sediment associated contaminants with freshwater invertebrates. EPA/600/R-94-024.13. U.S. Environmental Protection Agency.

WASHINGTON STATE DEPARTMENT OF
Natural Resources

FACSIMILE COVER LETTER

To: DAVE BORTZ
DNR

Telephone: (206) 298-4594 FAX: (206) 298-4597

From: **AQUATIC RESOURCES**
1111 WASHINGTON ST SE
PO BOX 47027
OLYMPIA WA 98504-7027

Telephone: (360) 902-1100

Sender's Name:
TIM GOODMAN
360 902 1057

FAX: (360) 902-1786

Date: 10-7-98

Time: 0940

Total number of pages (including cover sheet): 5

Description: QUENDALL CLEANUP COST NOTES

SEDIMENTS GROUP

1. Preliminary Investigation Conclusions
   A. Apparent Sediment Volumes for Baxter/Quendall

T-dock PAH Contamination:	12,500 cyd
Quendall Nearshore Area:	15,000 cyd
Baxter Cove:	850 cyd
Quendall Wood Waste:	28,500 cyd
Wood Waste Grey Zone:	150,000 cyd

      1) Grey zone has massive impact on overall volumes. Bioassays will determine whether grey zone is a "problem" or not.
      2) Volumes may drop off a bit depending on dredging analysis. Currently we are assuming 3-foot thickness in all areas. Contamination may be limited to 1 or 2 feet. Dredging technology will be important to determining the "actual" volume of material to be produced in the event of a removal action.
   B. NAPL migration
      1) Definitely have seeps in the Quendall nearshore area.
      2) Tar identified in three offshore borings

         VS-2: Deep seep offshore from north sump hot spot
         VS-30: Shallow seep in coarse sand near Hart Crowser well point #3.
         VS-4: Deep seep offshore of VS-30, near center of nearshore hot spot.

      3) In seep borings, contamination (product) was present beneath layers of cleaner material. Doesn't look like a surface spill. Fits very well with the conceptual model of a seep.
      4) W
2. Wood Waste Bioassays
   A. Have taken six wood waste samples for bioassays plus one off-site reference station.
      1) Samples to be run for full chemistry
      2) Acute and chronic bioassays are started at Burton's lab. Schedule limiting factor will be the chronic Hyallela bioassay.
   B. Reference station was taken offshore of park about 2 miles north of the site
      1) Nice clean silt, similar texture as site
      2) No wood debris in reference
      3) Small freshwater clams, lots of infaunal critters

3. Sediments Report
   A. Outline for this report was in the FS Work Plan. Discussion:

+ B. Sato: Don't know. Seems like a stretch, but could be some precedent. Might see a baseline action level, and then a MORE STRINGENT action level for specific sensitive areas. That would be more consistent with current policy.
+ B. Sato: With respect to action levels, buildings don't make much difference. Buildings on piles to create pathways. That is different.
+ G. Colburn: If material greater than 10,000 mg/kg PAH is left behind, does that mean that you'd move to a RCRA cap?
  + M. Larsen: Not necessarily. Cap design would have to be protective. Will look at capping issues in the Capping Memorandum soon.

E. RETEC is looking for input on what is needed in the Upland Constituents Memorandum. Discussion.

SEDIMENTS GROUP

1. Bioassay Update--No toxicity evident to date on the "grey zone" bioassays. Are midway through the acute assays.

2. Dredging Memorandum--Preview, and confirmation of scope
   A. RETEC opted to deal with dredging in an early memorandum so that the sediment alternatives can focus more on big picture issues.
      1) Somewhat difficult because sediment dredging is necessarily linked with the disposal/treatment alternative being considered
      2) The dredging analysis will look at issues related to each of the sediment alternatives.
      3) Pulling dredging memorandum out in front necessary to keep schedule moving.
   B. Memorandum will look at methods as applicable to each site unit
      1) Baxter Cove
         a) Special case because shallow, narrow, small overall volume and partial berm in place under as-is conditions
         b) Looking exclusively at shore-operated equipment (backhoe or shore-operated clamshell). Presuming that materials go upland for treatment.
         c) Presuming closure and dewatering of Cove as basic approach. Would reduce the water quality issues. Would require temporary Cove closure, then reopening after dredging completed.
      2) Quendall Tdock
         a) Basic comparison is mechanical vs. hydraulic dredging. Assuming all barge-mounted equipment.
         b) Presuming that materials go upland for treatment.
         c) Under hydraulic option, don't expect that it will be feasible to create large dewatering ponds due to staging and schedule constraints, but will do the engineering to verify this. Expect that enhanced dewatering and water

treatment system would be required. Water production rates could be 2,000 to 3,000 gpm.

d) Under mechanical option, there are variations in equipment type, water collection and sediment handling options.

e) Expect sheen on surface water under all options. Expect boom and silt curtain or Gunderboom. Possible other controls.

3) Quendall Nearshore

a) Mostly shallow-water dredging. Creates problems for barge access. Also have seep issues. Dredging for barge access in seep areas not good idea.

b) Materials chemically different from Tdock. Expect benzene in some nearshore materials.

c) Basic comparison is again mechanical vs. hydraulic dredging.

4) Wood waste

a) Presume mechanical dredging. Hydraulic has problems with debris. Don't see strong driver for hydraulic here.

b) Probably higher dredging rates for wood waste.

c) Presume material goes to upland for recycling, but possibly to biofiltration cell if muck fails bioassays.

C. FS Work Plan gives good overall summary of evaluation criteria for the dredging alternatives.

+ Glen: What about water quality criteria? Don't see that specifically spelled out.

+ M. Larsen: Agreed. Maybe we should have a specific meeting to go over water quality criteria prior to Dredging Memorandum. Will tap Ron Devitt, Justine Barton, Glen/Rod, others for that.

+ Glen: Timing issues will be important. Possible fishery for Sockeye. Won't know until counts made at locks. Also issues about water withdrawal from lake during summer months for hydraulic dredging.

+ M. Larsen: We'll have to write up contingencies to deal with salmon fishery issues. Hopefully we can use the draft Dredging Memorandum to begin the dialogue about this.

3. PCP Cleanup Levels

A. Unlike with PAH, site-specific bioassay data cannot really be used to define a cleanup level for PCP.

1) Generally PCP is only in the Baxter Cove sediments. But if a very stringent criteria is applied (i.e., < 0.1 mg/kg) then PCP is indeed present outside the Cove. This would affect volumes and dredging methods.

2) PAHs always coexistent with PCP at the site. Bioassay responses therefore driven by PAH.

3) Need to agree upon approach for setting PCP cleanup level so we can move forward with engineering.

B. Several options for deriving value

1) Use marine SQS/MCUL values?

2) Remedies differ in cost, permanence and impacts.
3) MTCA substantial and disproportionate analysis will be performed during FS to relate degree of risk-reduction to costs of remedy.

B. Remedy "A" is the containment only remedy, with the exception that it has DNAPL recovery and recycling, and wood waste (50%) dredging and recycling.
1) Remedy "A" is our base alternative--what we feel is required to be protective and to meet minimum Ecology/agency requirements.
2) Cost of Remedy "A" is roughly $12 million (with contingency included). Costs of other remedy packages are higher.

Rough Costs for Remedy "A" ($millions)

Containment wall	1.8
Sediment Capping	1.0
O&M	1.2
Mitigation	1.5
Wood waste removal	1.7
Demolition, piling removal	1.2
DNAPL system	0.5
Other activities	0.8
Contingency	2.0
Total (Rough)	11.7

3) Port Quendall may choose to do more than Remedy "A", but we need to understand the agency priorities, and the benefits to permanence and land use flexibility as we move to each higher cost threshold.

C. Remedies "B" through "K" are roughly in prioritized order. But we want to better understand the priorities of the agencies before we get to August and the Site-Wide Alternatives analysis.
1) In laying out the priorities, we have considered...
a) MTCA preferences
b) DNR concerns
c) Habitat issues and input from Muckleshoots and resource agencies
d) Development decisions about DNAPL
2) Not really feasible to do "K", but probably is feasible to do something more than "A". We view the Ecology-led group as an excellent one for prioritizing actions. Want to get the most "bang for the buck".

+ B. Sato: What about MTCA preferences for treatment, etc.? This will be very important in Ecology's decision about the cleanup.
+ J. Ryan: Protectiveness comes first. All these remedies are protective. For linking to the MTCA preferences, we basically need to turn the table of alternatives over on its head and then look at the relationships between practicability and permanence as we move from "K" to "A".

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office, 3190 - 160th Ave S.E. • Bellevue, Washington 98008-5452 • (425) 649-7000

October 14, 1998

Mr. Tim Goodman
Department of Natural Resources
Aquatic Resources
P.O. Box 47027
Olympia, WA 98504-7027

Dear Mr. Goodman:

RE: Port Quendall Sediment Standards Development Contract

As you are aware, Exponent has been working on their Cleanup Action Plan for the Port Quendall site. Enclosed you will find a copy of their draft Sediment Standards Development contract which I also faxed to you last week. Exponent is looking at a deadline of November 16, 1998 to submit a draft Cleanup Action Plan to Brian Sato. They would like to include this sediment section with that submittal.

Last year, the Quendall/Baxter Sediment Team met frequently. At that time Dave Bortz attended the larger JAG meetings and decided to defer the sediment issues to Ecology and the sediment team. Since we have new participants, new clients and new policies to contend with your participation is needed. I would like to have comments to Exponent before the November 16 deadline. Assuming you agree that a team effort is still acceptable, I would like to know how you would prefer to participate as part of the team. I realize that scheduling and commuting from Olympia may make it less than convenient for you to attend meetings on this issue on this short deadline. Please let me know what will work for you.

I look forward to talking to you soon.

Sincerely,

Martha Turvey

Martha Turvey
Sediment Specialist
Toxics Cleanup Program

MT:ll
Enclosure

cc: Dave Bortz, DNR

Exponent

FAX COVER SHEET

DATE: September 16, 1999 CONTRACT NO.: 8600BD0.007 0301

SEND TO: Jonathon Gurish Fax: (360) 586-2756
Washington Department of Natural Resources

CC: Fax:

FROM: Thomas Redd
Exponent Phone: (425) 643-9803
15375 SE 30th Place, Suite 250 Fax: (425) 643-9827
Bellevue, WA 98007

COMMENTS: Jonathon: Bill Joyce asked me to fax you some information from the City of Renton's Quendall Terminals project. Attached are two items. The first item is the Department of Ecology's comment letter on the previously submitted sediment section of the draft Focused Feasibility Study for the site. The second is the revised section of the Draft Focused Feasibility Study that Exponent prepared in response to Ecology's comments on the original text. If you have any questions about these documents, please give me a call at (435) 643-9803

LIST OF ATTACHMENTS: December 30, 1999 letter from Martha Turvey, Department of Ecology, Pages 3-32 through 3-44 of the Quendall Terminals Draft Focused Feasibility Study.

TOTAL PAGES (including this cover sheet) _____ Send original via mail? Yes ☐ No ☐

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office, 3190 - 160th Ave S.E. • Bellevue, Washington 98008-5452 • (425) 649-7000

December 30, 1998

Shawn Severn
Exponent
15375 SE 30th Place
Suite 250
Bellevue, WA 98007

Dear Shawn:

RE: Comments on the Sediment Standards Development for Quendall Terminals draft dated October 6, 1998

Thank you for submitting the sediment section of the Cleanup Action Plan (CAP) to the sediment committee a month earlier than the draft CAP. Your early submission of this section of the CAP was particularly helpful in facilitating the review process. I have met with the sediment team assigned to this site and have compiled the following comments on this preliminary cleanup document.

In general, to support the recommendations made in this document, we recommend expanding the historical information and data sections. In addition, some of the important inaccuracies that we found will be addressed in our comments. Secondly, the document does not provide an adequate discussion of the alternatives that were considered. Most importantly it does not address the ecological risks and protections that would be afforded by the alternatives or the proposed cleanup action plan.

Cap Thickness (cover letter, page 2):

The first paragraph mentions the use of a six inch cap to address contamination in the gray zone. We do not agree that a 6 inch cap is adequate to address contamination and it may also not be achievable given capping technologies. The Pt. Quendall site is also not considered a depositional area and so a natural recovery option where a six inch cap would be used is not appropriate for this site. Earlier, RETEC documents discussing the cap made reference to a proposed 3-6 foot design. What is the basis for this shift in design?

This document should address what the remediation objectives are and what can be achieved by capping and different cap thicknesses. There are numerous references which discuss capping technologies in both fresh and marine environments that can assist with level of protectiveness discussions. For example, we recommend EPA 1998, "Assessment and Remediation of Contaminated Sediments (ARCS) Program Guidances for In-Situ Subaqueous Capping of Contaminated Sediments," EPA 905-B96-004, prepared for the Great Lakes National Program Office, Chicago, Illinois.

Constituents of Concern (page 1, para. 1):

The statement on constituents of concern in the sediments off shore to Quendall is not comprehensive enough. This section should fully summarize the information on all contaminants that were searched for and describe what was found and where. To save time you can incorporate the RETEC studies by reference. The concern is that the preferred remedial design that was developed by RETEC and the alternative developed by Exponent are very different. A more fully developed section on the contaminants may help support the preferred design.

Limitations in the Derivation of the Site-Specific AET for PAH's (pages 2 & 3):

The text at the bottom of page 2 should be revised to reflect the following shortcoming of deriving a cleanup value based on a limited data set. Specifically, it should explicitly state in the text that the *Hyalella* test data used to develop the site-specific AETs were based on mortality rather than the more sensitive growth endpoint (pers. comm. Mark Larsen, RETEC). The *Hyalella* acute test (particularly the mortality endpoint) is regarded as insensitive relative to other endpoints and test species, particularly since this amphipod is not an obligate sediment dweller (i.e., it can reduce its exposure by avoiding the sediments and remaining in the water column). Thus, an AET derived from this data may be under-conservative relative to predicting sublethal effects in the benthos.

Sensitivity of the Microtox Test (page 3):

At the end of the first paragraph you state that the Microtox test is not generally used by Ecology in setting sediment cleanup values because it is overly sensitive. Oversensitivity, however, is not a reason to reject a bioassay for environmental assessment purposes. In fact, Microtox has an extensive track record as an appropriately sensitive assessment tool in the freshwater environment. It is the basis of several of the marine AET's and is one of two tests used by Ecology in the development work on freshwater AET's. This paragraph is also of concern given that Ecology has recommended the Microtox test for use at Port Quendall if a second round of bioassays are done on the gray zone.

Evaluation of Protection Afforded by the Site-Specific AET (pages 3 & 4):

The protection and risks associated with using the 100 ppm site-specific cleanup value are not adequately addressed in this draft section. The text focuses on comparison of the proposed value to freshwater AET's developed by Ecology. However, no mention is made of the discussions that took place between Exponent and the agencies in July/August regarding reevaluation of the basis for and protection afforded by the 100 ppm value. In particular, the text does not reflect the agencies' recommendation that Exponent discuss the proposed value in terms of the protection of juvenile salmon (and their prey species) or salmon habitat. This would appear to be a grave oversight, given the presence of a listed species in the vicinity of this site.

Comparison of PAH Cleanup Value to Other Sediment Quality Standards (pages 3 & 4):

Although Ecology has not yet promulgated freshwater sediment criteria, there have been some recent developments in the federal level to identify ecologically relevant criteria for PAH's in freshwater and marine sediments. The document needs to be modified to include a comparison to these other numerical sediment quality guidelines. A discussion of the most recent developments in PAH research and its effects on benthic communities will provide invaluable support for the cleanup options being considered at this time. A review of this information (see below) supports the conclusion that the proposed cleanup value of 100 ppm dry weight is not overly conservative relative to other values that are being discussed, however, it is believed to be protective of the environment.

The following information is provided for inclusion in the revised section. As this information is based primarily on unpublished information, this comment letter should be cited as a reference.

As part of ongoing efforts to revise and develop national sediment quality guidelines based on equilibrium-partitioning, EPA has developed a maximum acceptable concentration for summed PAH's of 7.2 uMoles/g organic carbon (OC) based on narcosis in benthic invertebrate organisms. The preliminary value is expressed in molar units because it is believed that the non-specific mode of toxic action exhibited by this class of chemicals is proportional to the number of molecules involved in the exposure. Conversion of the Port Quendall 100 ppm site-specific cleanup value (assuming an average OC concentration of 5% in the PAH contaminated sediments and using the standard molecular weight for a 3-ring PAH of 200 ug/uMole) results in a value of 10 uM/gOC. Thus, the estimated micro-molar equivalent of the proposed cleanup value is very similar to the value which EPA is proposing as protective of benthic invertebrates.

In addition, there is the question of "photo-induced" toxicity of PAH's to benthic organisms. Boese et al., have recently published a paper [Arch. Environ. Contam. Toxicol. 34,235-240 (1998)] that compares "photo-activated" sediment LC50 of 10.5 uM/gOC and an EC 50 for the amphipod, Rhepoxynius. The lowest values that they given are an LC50 of 10.5 uM/gOC (reburial) of 1.4 uM/gOC. Given the margin of error that is typical of such measurements, the values presented are very similar to those developed by EPA (7.2 uM/gOC) and that proposed by Exponent (10 uM/gOC).

Recent studies conducted by NOAA have attempted to correlate exposure to sediment PAHs with adverse effects in fish. A recent study by Horness BH, Lomax DP, Johnson LL, Myers MS, Pierce SM, Collier TK, 1997. *Sediment Quality Thresholds: Estimates From Hockey Stick Regression of Liver Lesion Prevalence in English Sole (Pleuronectes vetulus)*, National Marine Fisheries Service, NOAA, Seattle, WA, estimates thresholds for PAH toxicity using a statistical regression of field data reporting synoptic measurements of liver lesions in English sole and PAH contamination in sediments. They report values ranging from 230-2800 ppb dry-weight as thresholds for effects (lesions). However, strong the association between the observed effects and trends in sediment PAH concentrations, lack of exposure data and the presence of

co-occurring contamination (e.g., PCBs) complicates the ability to conclusively identify PAHs as the cause of the lesions observed. Based in part on this study, researchers at NMFS have recently proposed 2 ppm dry weight as a threshold sediment concentration that has been proposed for ecological effects associated with PAHs in sediments.

Wood Waste (page 4):

The citation regarding the wood waste paper needs further clarification. It is an issue paper prepared by the two listed authors for the PSDDA agencies (Corps, EPA, DNR and Ecology). It represents their policy regarding wood waste as dredged material. The paper also represents Ecology's position regarding wood waste and the Sediment Management Standards.

Summary of the Results of Past Testing (page 6):

The discussions regarding the results of bioassays testing is incorrect. The Chironomus tentans 10 day test provided the only valid test data. The Hyalella azteca 10 day did not meet QA guidelines. The lab performing this test using less than the prescribed number of replicates (2 rather than 8 required by the ASTM) and the resulting data lacked adequate statistical power for decision making. The Hyalella azteca chronic test failed performance standards, i.e., poor control and reference sediment survival. Consequently, the agencies have requested that a new suite of organisms for use in testing sediment samples collected from the gray zone will have to be identified. Please refer to the May 8, 1997 letter from Ecology and the memorandum for RETEC to Brian Sato, Ecology, dated June 2, 1997.

Presentation of Alternatives for Cleanup:

A section needs to be added to this document which presents costs and environmental risks associated with various cleanup options that are being considered for this site. For instance, the document should clearly present the option of dredging sediments with PAHs greater than 100 ppm and covering PAHs greater than 50-60 ppm (based on the proposed freshwater LAET from Cubbage). Additionally, there appears to be significant spatial overlap between the "worst case" gray area (that the City has indicated it is prepared to cover/cap with clean sediment) and sediments with PAH contamination less than 100 ppm dw but greater than 60 ppm dw. A cleanup alternative that involves covering the entire gray area could potentially address any remaining issues regarding PAH contamination. A figure illustrating the overlap between the PAH contaminated areas and the gray wood waste zone would help elucidate this possibility. Finally, it is important that Exponent explicitly present all details and assumptions that have been used to justify their position that cleaning up PAHs to any level lower than 100 ppm dw would be cost prohibitive.

Summary:

It is our understanding that the City of Renton is presently in the "decision making" process involving whether they will proceed with plans for clean-up activity at the Pt. Quendall site. If the decision is to move forward, we hope the incorporation of these comments will help improve

the scope and supportability of the sediment section of the CAP. From our meetings and discussions Exponent has stated that their main concern is with the cleanup values that were developed during the first phase of the study. I think it is clear that the cleanup levels will remain the same. It is Ecology's opinion that the PAH values are not considered as conservative as they were in 1997, given the new information that is discussed in some detail in this letter. It is important that a CAP drafted in 1998 discuss these issues openly and therefore will help support the current decisions.

I look forward to discussing these comments with you. Please let me know what your schedule is for completing the revisions to the CAP and when a decision from the City of Renton will be made.

Sincerely,

Martha Turvey
Sediment Specialist
Toxics Cleanup Program

MT:ct

cc: Brian Sato, Ecology
Rick Huey, Ecology
Glen St. Amant, Muckelshoot Tribe
Erika Hoffman, EPA
Stephanie Stirling, COE
Tim Goodman, DNR

If the resulting hazard index from the above algorithm exceeds one (i.e., the target hazard index for combined exposures), the sample is considered out of compliance.

3.4.2.2 Sediment Cleanup Standards

The following discussion summarizes the site-specific sediment cleanup levels developed with Ecology and other resource agencies for sediments offshore of the Quendall Terminals site. Sediment Quality Standards (SQS) under the SMS correspond to sediment quality that will result in no adverse effects, including acute or chronic adverse effects on biological resources and human health (WAC 173-204-320). Ecology has used the Apparent Effects Threshold (AET) approach to establish marine sediment quality values protective of biological resources. An AET is defined as the sediment concentration of a given chemical above which a particular adverse biological effect is expected to be statistically significant ($P<0.05$), relative to appropriate reference conditions (Barrick et al. 1988). Examples of adverse biological effects include depression in the abundance of indigenous benthic infauna, or acute or chronic toxicity to organisms exposed to contaminated sediments in a standard toxicity test. The establishment of an AET requires a data set of synoptically collected chemical and toxicity test data over a broad range of concentrations of the constituent of interest. Although Ecology has developed freshwater sediment AETs, they have not been proposed as the basis for freshwater sediment chemical criteria (Ecology 1997).

To conform with state standards and the intent of the SMS, a sediment cleanup value for total PAH was developed for the Quendall Terminals site sediments following the AET approach. Wood waste is not amenable to a similar approach under the SMS; however, Ecology may designate excessive wood waste as "other deleterious substances," and can require cleanup on a case-by-case basis (WAC 173-204-520(5)). At Ecology's discretion, the cleanup criterion for wood waste may be established based on specific site conditions.

3.4.2.3 Total Polycyclic Aromatic Hydrocarbons in Sediment

A site-specific AET for total PAH was determined by RETEC (1997) using paired sediment chemistry and toxicity test data from earlier studies conducted by Ecology at the Quendall Terminals site. The sediment toxicity tests were conducted by Ecology using *Hyalella azteca*, *Daphnia magna*, *Ceriodaphnia dubia*, *Chironomus tentans* (acute and chronic exposures), and Microtox®. Using the results from these tests, RETEC (1997) calculated AETs for each test endpoint.

The only tests for which it was possible to determine a discrete AET value were the acute *Hyalella azteca* test and the Microtox® test. The acute *Hyalella azteca* test demonstrated the most consistent dose-response relationship for total PAH, and yielded an AET for total PAH of 128 mg/kg dry weight. Because the data set did not include other sediment samples with total PAH concentrations close to this value (i.e., the sample with the next lowest concentration, 29.2 mg/kg dry weight, did not cause significant toxicity; the sample with the next highest concentration, 345 mg/kg dry weight, did cause significant toxicity) there is some uncertainty associated with this AET value. If other sediment samples had been available within this concentration range, the only possible effect would have been to raise the AET value (i.e., for a sample with a total PAH concentration lower than 128 mg/kg dry weight, the result for the sample with 128 mg/kg dry weight would still have set the AET; for a sample with a total PAH concentration greater than 128 mg/kg dry weight, a finding of significant toxicity would not have changed the AET, but a finding of no effect would have caused that sample to set the AET).

It should be recognized that the mortality endpoint used in the acute *Hyalella azteca* test is considered to be rather insensitive relative to other endpoints and test species, particularly because this amphipod species is not an obligate sediment dweller (i.e., it can reduce its exposure by avoiding contact with the sediments and remaining in the water column). Thus, the AET derived using the *Hyalella azteca* test may not provide appropriate predictions of sublethal effects in benthic species. By comparison, the

Microtox® test was more sensitive (i.e., the AET value was lower, 29.2 mg/kg dry weight).

The AET for total PAH developed for the Quendall Terminals site using the *Hyalella azteca* test is conservative when compared with the freshwater sediment AETs developed by Ecology (1997) using data from a variety of studies. The AETs reported by Ecology (1997) for total PAH were 700 mg/kg dry weight for *Hyalella azteca* (based on 138 sediment samples) and 170 mg/kg dry weight for Microtox® (based on 25 sediment samples). Thus, the AET for total PAH developed for the Quendall Terminals site (128 mg/kg dry weight) was lower than either of the AETs developed by Ecology (1997) using a much larger database. This suggests that the site-specific 128 mg/kg dry weight AET is a conservative (i.e., environmentally protective) estimate of a "no adverse effects" level for evaluation of sediment contamination at the Quendall Terminals site. As a result of negotiations with Ecology and other resource agencies, it was decided to introduce a further degree of conservatism by selecting a site-specific cleanup value for total PAH lower than the AET value. This site-specific cleanup value (100 mg/kg dry weight total PAH) has been accepted by Ecology (Turvey 1997a, pers. comm.).

To put this site-specific cleanup value into context, it should be recognized that the marine sediment standards of the SMS contain two sets of chemical criteria. The SQS values, as indicated earlier, essentially represent "no adverse effects" criteria. Another set of chemical criteria, the cleanup screening levels (CSL), are generally higher than the SQS values and are used for determining whether sediments are sufficiently contaminated to require remediation. Although Ecology has not yet promulgated freshwater sediment criteria, it can be assumed by analogy with the marine sediment standards that a similar two-tier criteria system would be appropriate.

In the absence of promulgated freshwater sediment criteria, Ecology (1997) has suggested two possibilities for generating "no adverse effects" criteria for evaluating freshwater sediments. These are the lowest AET (LAET) value from the *Hyalella azteca* and Microtox® data sets or the probable AET (PAET) value (defined as the

95th percentile of the "no hit" concentrations above the lowest "hit" concentration for either the *Hyalella azteca* or Microtox® data sets). For total PAH, the LAET value is 170 mg/kg dry weight and the PAET value is 60 mg/kg dry weight. Thus, the site-specific cleanup value for the Quendall Terminals sediments (100 mg/kg dry weight) is approximately midway between these two values. There has been no attempt to define criteria for freshwater sediments representative of a CSL. By analogy with the marine sediment standards, however, it could be expected that a value representative of a CSL for freshwater sediments would be higher than these essentially "no adverse effects" levels. Hence, the site-specific cleanup value for total PAH in the Quendall Terminals sediments (100 mg/kg dry weight) is similar to other sediment quality guidelines developed by Ecology that are intended to be protective of benthic invertebrates.

To further evaluate the environmental protectiveness of the site-specific cleanup value for total PAH in the Quendall Terminals sediments, comparisons can be made to sediment quality guidelines derived independently elsewhere in the country. As part of ongoing efforts to revise and develop national sediment quality guidelines based on equilibrium partitioning, EPA has proposed a sediment quality criterion for total PAH of 6.04 μmol/g organic carbon (U.S. EPA, unpublished). This value is expressed on a molar basis because it is believed that the non-specific mode of toxic action (i.e., narcosis in benthic invertebrates) exhibited by this class of chemicals is proportional to the number of molecules involved in the exposure (i.e., molecules of the different PAH compounds are equally capable of producing the effect, and their effects are additive). This criterion is said to "discriminate sediments that represent background conditions from those with an intermediate probability of adverse effects" (U.S. EPA, unpublished). If expressed on a molar basis, the site-specific cleanup value developed for the Quendall Terminals sediments (100 mg/kg dry weight) is equivalent to 10 μmol/g organic carbon (assuming an average total organic carbon concentration of 5 percent in the PAH contaminated sediments and using the approximate molecular weight for a three-ring PAH of 200 μg/μmol). Thus, the estimated molar equivalent total PAH concentration proposed as the site-specific cleanup value for the Quendall Terminals sediments is roughly

equivalent to the national sediment quality guideline undergoing development by EPA (i.e., 10 μmol/g organic carbon versus 6.04 μmol/g organic carbon, respectively).

In a recent study, Boese et al. (1998) investigated the photoinduced toxicity of parent and alkylated PAH compounds in sediments. The marine infaunal amphipod *Rhepoxynius abronius* was first exposed in standard 10-day toxicity tests to sediments that had been spiked with known concentrations of various parent and alkylated PAH compounds. After the exposures, mortalities (LC_{50} values) and the ability of the survivors to rebury in control sediment (EC_{50} values) were determined. Survivors of these initial toxicity tests were then exposed to ultraviolet radiation in an environmental growth chamber for 1 hour. After the ultraviolet exposure, LC_{50} and EC_{50} values were again calculated. Initial LC_{50} values varied among the various compounds tested (range of LC_{50} values from 10.6 to 233 μmol/g organic carbon). Initial EC_{50} values also varied among the various compounds tested, and were similar to the LC_{50} values (range of EC_{50} values from 10.6 to 227 μmol/g organic carbon). Following the ultraviolet exposures, the range of LC_{50} values (10.5 to 230 μmol/g organic carbon) was similar to the pre-exposure LC_{50} values, but the lower end of the range of EC_{50} values decreased (range of EC_{50} values from 1.4 to 223 μmol/g organic carbon). The authors concluded that some of the parent and alkylated PAH compounds taken up from the sediments by the amphipods became more toxic upon exposure to ultraviolet wavelengths. They believe that the enhanced toxicity is likely attributable to the internal production of singlet oxygen upon photoactivation of the bioaccumulated contaminants. It is of interest to note that the lower end of the range of both initial LC_{50} and EC_{50} values (10.6 μmol/g organic carbon) was similar to the molar equivalent total PAH concentration proposed as the site-specific cleanup value for the Quendall Terminals sediments (10 μmol/g organic carbon). Although the lower end of the range of EC_{50} values following ultraviolet exposure was an order of magnitude lower (i.e., 1.4 μmol/g organic carbon), the ecological relevance of such a value is highly questionable. In the environment, ultraviolet wavelengths are rapidly absorbed by water, such that relatively little ultraviolet radiation penetrates natural bodies of water to depths of more than a few centimeters. Amphipods dwelling near the sediment interface under a foot or more of water would be exposed to very little ultraviolet radiation, whereas

Boese et al.'s (1998) experimental amphipods were exposed to ultraviolet radiation in petri dish lids only 7 mm deep. Hence, the initial LC_{50} and EC_{50} values of Boese et al. (1998) are likely the more relevant comparison with the Quendall Terminals value.

In a recent review article, Swartz (1999) compared a wide variety of sediment quality guidelines for PAH compounds that have been derived from diverse laboratory, field, and theoretical foundations. He found that when expressed as a mixture concentration (i.e., total PAH), the guidelines form three clusters that were intended in their original derivations to represent threshold, median, and extreme effects concentrations (referred to as TEC, MEC, and EEC). The arithmetic means of the values within each of these three clusters were represented as the consensus TEC, MEC, and EEC values (290, 1,800, and 10,000 μg/g organic carbon). Using the approximate molecular weight for a three-ring PAH of 200 μg/μmol, the molar equivalent concentrations of these values are 1.45, 9, and 50 μmol/g organic carbon. According to Swartz (1999), total PAH concentrations below the TEC (equivalent to 1.45 μmol/g organic carbon) would be unlikely to cause adverse effects on benthic ecosystems. Conversely, Swartz (1999) indicates that total PAH concentrations above the EEC (equivalent to 50 μmol/g organic carbon) would almost certainly cause adverse effects. The region of greatest uncertainty lies at total PAH concentrations in the range between the TEC and EEC, which represents a broad gradient of sediment contamination along which adverse effects are increasingly more probable. According to Swartz (1999), the MEC (equivalent to 9 μmol/g organic carbon) is simply a point near the middle of this gradient and, therefore, should not be used to discriminate acceptable from unacceptable conditions. It is of interest to note that Swartz's (1999) MEC (equivalent to 9 μmol/g organic carbon) is similar to the molar equivalent total PAH concentration proposed for the Quendall Terminals sediments (10 μmol/g organic carbon). Swartz (1999) concluded that bulk sediment chemistry cannot resolve the uncertainty regarding toxicity and ecological effects at TPAH concentrations between the TEC and EEC, but that the issue could be resolved through the collection of independent, empirical data on sediment toxicity and benthic communities. Therefore, the conduct of additional sediment toxicity tests with Quendall Terminals sediments will be necessary to

reduce the uncertainty associated with predicting adverse effects on benthos based only on comparisons with the site-specific total PAH cleanup value.

Ecology has also expressed concern that the site-specific cleanup value selected for total PAH in the Quendall Terminals sediments should be protective of fish, especially juvenile salmon, that may frequent the site. Unlike the situation with sediment quality guidelines developed for the protection of benthic invertebrate communities, however, there have been few efforts to develop sediment quality guidelines for the protection of fish. Horness et al. (1997) recently used "hockey stick" regressions for identifying sediment quality thresholds for total PAH on the basis of associations with liver lesions in English sole. The "hockey stick" regression approach is predicated on the collection of paired samples of English sole and sediments. Horness et al. (1997) assembled a set of 29 such paired samples from all over the West Coast, encompassing a broad range of sediment contamination. The English sole were examined by histopathologists to assess the prevalence of various liver lesions believed to be associated with exposure to chemical contaminants. Sediments collected from the immediate vicinity of the locations where the fish were collected were analyzed for total PAH. The prevalence of each type of liver lesion was then plotted as a function of the concentration of total PAH in the associated sediment samples. The resulting plots are said to resemble hockey sticks because there appears to be bend in the regression line (i.e., at low sediment concentrations of total PAH, the prevalence of the liver lesion is low and apparently unaffected by the total PAH concentration; at some threshold concentration, the prevalence begins to increase with increasing concentrations of total PAH). "Hockey stick" regression methods were used by Horness et al (1997) to identify these threshold sediment concentrations of total PAH for each type of liver lesion.

Even for the English sole, the significance of the results is questionable. Among the five regressions discussed, only four demonstrated a statistically significant relationship. Among those four, the confidence limits about the sediment quality thresholds for two were very broad, encompassing nearly three orders of magnitude in the concentration of total PAH. Although the confidence limits about the sediment quality thresholds

identified for the other two were much narrower, they were still approximately half an order of magnitude. The range of the sediment quality thresholds identified by this method for total PAH (230–2,800 μg/kg dry weight) is far below the lowest AET values for Puget Sound (5,200 μg/kg dry weight for low molecular weight PAH [LPAH] and 12,000 μg/kg dry weight for high molecular weight PAH [HPAH]). (Direct comparisons of these values should be interpreted with caution because Horness et al. (1997) used a different set of compounds in their definition of LPAH and HPAH than were used in development of the AET values.) Furthermore, the sediment quality thresholds identified by the "hockey stick" regressions are within the range of total PAH concentrations observed in Puget Sound reference areas (i.e., the range of LPAH concentrations in Puget Sound reference areas is 1.4–1,100 μg/kg dry weight and the range of HPAH concentrations in Puget Sound reference areas is 2.5–2,300 μg/kg dry weight; Pastorok et al. 1989). The extreme sensitivity of such thresholds raises the question of their applicability to sediment management decisions. That is, if the thresholds supposedly associated with adverse effects are similar to natural background concentrations, it is inconceivable that they would be of any use in making decisions about the potential need for sediment cleanup.

Application of the "hockey stick" regression method to the development of numerical sediment criteria for the protection of English sole may have some intuitive merit because these fish live in contact with the sediments, they are relatively sedentary, and they tend to remain in a given area for extended periods. Therefore, comparing the prevalences of liver lesions in the fish with chemical concentrations measured in sediments collected from the same locale might be of interest. It should be noted, however, that this method has not been applied in any published study to Puget Sound fish other than English sole or to chemicals other than total PAH. It should also be recognized that these regressions do not prove cause and effect. The chemical causing the liver lesions could be one that covaries with total PAH, and it is entirely possible that better regressions would be achieved if the researchers had examined any chemicals other than total PAH.

Moreover, even if there were not some uncertainty in the derivation of sediment quality guidelines using the "hockey stick" regression method on English sole liver lesion data, application of those guidelines for the protection of juvenile salmon is questionable, because the young salmon inhabit the water column rather than the bottom and they are much more mobile and less likely to remain in a specific locale for an extended period. Although a similar approach could be applied to the derivation of sediment quality guidelines specifically protective of juvenile salmon, there have been no published studies of such an effort to date. In fact, such an approach is unlikely to yield meaningful results because sediment samples collected from the immediate vicinity of where the fish were collected may not be indicative of the exposure regime these fish have experienced. This is likely to introduce additional variability that would make the identification of discrete sediment quality thresholds more difficult. Hence, application of a similar approach to the derivation of sediment quality guidelines protective of juvenile salmon is unwarranted.

Researchers at the National Marine Fisheries Service in Seattle have recently expressed the opinion that a total PAH sediment quality guideline of 2 mg/kg dry weight should be used as a threshold for adverse effects on fish, notably juvenile salmon. However, the researchers have not offered any scientific basis for the derivation of such a guideline. Furthermore, as noted earlier, this value is at the upper end of the range of total PAH concentrations in Puget Sound reference areas. The extreme sensitivity of the threshold proposed by the NMFS researchers makes it doubtful that it would be of any use in making decisions about the potential need for sediment cleanup.

The fact that there have been no sediment quality guidelines developed for the protection of juvenile salmon is, at least in part, a result of the limited potential for adverse effects associated with their exposure to chemicals in sediments. In the absence of such guidelines, sediment quality guidelines protective of their prey, such as benthic invertebrates, may be used for ensuring (albeit indirectly) protection of the fish. It has been shown that the site-specific sediment cleanup value developed for total PAH at the Quendall Terminals site (100 mg/kg dry weight) is similar to other guidelines developed

using other approaches. This provides confidence that this value should be protective of the benthic invertebrate community at the site, thereby ensuring that the prey of juvenile salmon should not be adversely affected.

There are two areas with shallow sediments whose total PAH concentrations exceeded the site-specific cleanup level (100 mg/kg dry weight) (Figure CN-12a): offshore sediments at the end of the T-dock and nearshore sediments at the foot of the T-dock. Offshore sediments with total PAH concentrations above the cleanup level were generally found between the surface and 3.5 ft below the mudline. Nearshore sediments at the foot of the T-dock were found to exceed the cleanup level down to 1.5 ft below the mudline.

Two areas of deep sediment contamination were detected during Phase II sampling. The first of these was located within the area of nearshore PAH contamination at the foot of the T-dock. Subsurface areas to the north of the T-dock were found to contain DNAPL between 2 and 10 ft below the mudline at Station VS-30, and between 16.5 and 17 ft below the mudline at Station VS-4(1) further offshore. These two areas of deep contamination will be addressed as part of the upland remediation. The RAO for T-dock and nearshore sediments is the removal (i.e., dredging) of those areas that exceed 100 mg/kg dry weight PAH.

3.4.2.4 Wood Waste in Sediment

A joint issue paper on wood waste (Kendall and Michelsen 1997) was recently prepared on behalf of the Dredged Material Management Program (DMMP) and the Washington State SMS Cleanup Program. The issue paper represents the policy of the DMMP agencies (the U.S. Army Corps of Engineers, EPA, Ecology, and the Washington State Department of Natural Resources [DNR]) regarding the management of wood waste as dredged material. The paper also presents Ecology's position regarding management of wood waste under the SMS. The paper states that under the SMS, Ecology is not

proposing specific numerical standards for wood waste (i.e., such as a criterion for total organic carbon content), but rather will determine site-specific cleanup requirements for wood waste based on toxicity test results.

For Quendall Terminals, the resource agencies agreed that sediments with wood waste concentrations greater than 50 percent, as defined by Sediment Vertical Profile Imaging and video transects, would be removed by dredging without further biological testing. However, for sediments having less than 50 percent wood waste, it was agreed that the current assumption is that these sediments would be capped, but that before construction of the cap, toxicity testing will be performed in the summer of 2000 to determine whether sediments are causing significant deleterious effects and whether the area to be capped could be reduced based upon the test results.

The extent of wood waste in sediments offshore of the Quendall Terminals site was evaluated during RETEC's Phase I and Phase II investigations using a combination of Sediment Vertical Profile Imaging and video transects. The principal area of sediments containing greater than 50 percent wood waste was identified as an area of approximately 18,750 yd^2 located offshore of the Quendall Terminals log dump (Figure CN-22).

Areas where the sediments contain less than 50 percent wood waste are indicated as gray hashmarks in Figure CN-22. Within this "gray zone," RETEC conducted acute and chronic toxicity tests to determine if there were any deleterious effects associated with the wood waste. RETEC conducted three different toxicity tests with "gray zone" sediments: 1) a 10-day acute toxicity test using the midge *Chironomus tentans*, with mortality and weight gain endpoints; 2) a 10-day acute toxicity test using the amphipod *Hyalella azteca*, with mortality and weight gain endpoints; and 3) a 42-day chronic toxicity test using the amphipod *Hyalella azteca*, with mortality and reproduction endpoints. All of the tests represent whole-sediment toxicity tests. The *Chironomus tentans* 10-day test provided the only valid test data. The *Hyalella azteca* 10-day acute toxicity test did not meet quality assurance guidelines because the laboratory performing the test used less than the prescribed number of replicate samples (i.e., 2 rather than the 8

required by the test protocol) and the resulting data lacked sufficient statistical power for decision-making. After only 28 days in the 42-day toxicity test, the survival of *Hyalella azteca* was poor for both control and reference sediments (32.5 percent and 49.2 percent survival, respectively). Consequently, the 42-day toxicity test was terminated without yielding data that could be used in decision-making.

The results of the *Chironomus tentans* toxicity test suggest that wood waste materials in the "gray zone" are not causing acute toxic effects. However, the results of a second valid acute toxicity test are necessary to support this interpretation, and the *Hyalella azteca* 10-day test did not yield acceptable results. In addition, the chronic toxicity test using *Hyalella azteca* was terminated without yielding valid results because of high mortality in the control and reference samples. In the absence of reliable data from a suite of sediment toxicity tests, the agencies have requested that a new suite of toxicity tests be conducted on sediment samples to be collected from the "gray zone" where wood waste concentrations are less than 50 percent. This will be done prior to deciding on the need for remediation of that area, or to determine whether a reduced capping area in the "gray zone" would still be protective.

3.4.3 Summary of Development of Cleanup Standards

Numerical cleanup standards were identified for affected groundwater and sediments at the site. Numerical cleanup standards were not identified for soil because in cleanup actions that involve containment of hazardous substances, Ecology may determine that the cleanup action complies with cleanup standards (WAC 173-340-360(8)). The numeric cleanup standards for groundwater were established, and are shown on Table 3-6. The site-specific numeric cleanup levels for PAH-affected sediments were established using the AET approach to identify the sediment quality that will result in no adverse effects, including acute or chronic adverse effects on biological resources and human health (WAC 173-204-320). The cleanup levels for wood waste were developed with Ecology based on WAC 173-294-520(5).

The site-specific numerical cleanup level for total PAH in sediments is 100 mg/kg dry weight. Sediments with greater than 50 percent wood waste will be removed. For sediments having less than 50 percent wood waste, these sediments will be capped unless toxicity testing to be performed in the summer of 2000 demonstrates that these sediments are not causing significant deleterious effects. In the latter case, the area to be capped could be reduced based upon the toxicity test results.

From: TIM GOODMAN
To: TAMARA ALLEN
Date: Wed, Feb 10, 1999 11:15 AM
Subject: Re: Wood Debris

At Qundal/Baxter I never openly went against Ecology's position. However, in conversations between Ecology and DNR only, I felt that the purpose of a bownsfield project was to find a compromise that would keep development money involved in cleanup. Ecology did not follow my advice and now Paul Allen has backed out of the sediment cleanup and Ecology is having to use toxics money to fund the site in cooperation with the City of Renton, who is dragging their heels and balking at sharing the cost of cleanup. So, because Ecology wanted every bit of wood debris tested or removed, we still have pools of PAHs in the sediment.

Everyone agreed that areas of more than 50% coverage would be removed. Less than 50% was refereed to as the "gray area". Ecology insisted on bioassays in the gray area. These were performed, but did not meet QA/QC (too much die off in the control). Ecology was suspicious that RETEC would not do Microtox and suspected that RETEC may have gotten bad results in secret.

My philosophy was that if Paul Allen paid for removing all PAHs, and wood waste greater than 50% and removed and controlled upland sources this was a good deal and we should not look a gift horse in the mouth (this saying makes no sense to me).

Wood waste does not bioaccumulate as a threat to human health. In large quantities it does skew the environment, but in quantities less than 50% should we make it a priority to the extent that cleanups of truly toxic substances are held up or are not performed? I say no.

>>> TAMARA ALLEN 02/10 10:48 AM >>>
Tim, could you give me a summary of the position DNR has taken at the wood debris sites you have been managing. Quendall-Baxter (sp?) comes to mind, but there may be others. I need to have some concept of where we are coming from on this issue because I am meeting with Ecology on the 23rd to talk about the huge wood debris issue in Port Angeles Harbor; they would like to talk about where the State wants to go with cleanup, so it would be a good idea for me to know what DNR's position has been and might be in the future...Please let me know your thoughts. Thanks.

Tammy

CC: TED BENSON

WASHINGTON STATE DEPARTMENT OF
Natural Resources

JENNIFER M. BELCHER
Commissioner of Public Lands

MEMORANDUM

April 29, 1999

TO: Bonnie B. Bunning

FROM: David Bortz

SUBJECT: City of Renton - Port Quendall Project

On April 20, 1999, the Department of Natural Resources' (DNR) staff, Tim Goodman - Sediments, John Boettner - Habitat, David Bortz - South Puget Sound Region, and Jonathon Gurish - AAG met with representatives of the City of Renton (Renton) and Paul Allen's company - Port Quendall (PQ). Renton was represented by Bill Joyce, outside counsel, Tom Redd - Exponent - consulting firm for sediments, Chuck Wolfe - attorney for PQ, John Ryan - Sediments consultant for PQ, and Andy Kindig the habitat consultant for Renton and PQ.

NEED FOR MEMO:
To inform you and other managers of the project and the proponents' urgency, of the need for DNR technical staff to help get to a protective outcome for DNR interests, to get direction on where this project fits in the use of limited DNR resources, and get direction on how the decision process/information flows should be handled.

BACKGROUND:
As you may recall PQ had options to purchase two parcels on Lake Washington, north to south, the Baxter Company and Quendall Terminals Company (not to be confused with Mr. Allen's PQ business entity) parcels, respectively, in Renton. At the mill site for these two property owners, there were two leases for log storage (expired 1996 - holdover offered, not signed). PQ never closed on the properties since the total cost of cleanup (uplands and lake), redevelopment, and I-405 interchange improvements compared to the redeveloped property's income potential was prohibitive. PQ had proposed $12 to 15 million dollars for cleanup of uplands and the DNR beds and private shorelands and another $12 to 15 million of facilities/construction passive remediation (not to exceed $27 million total) could result in some site uplands, shorelands and beds, so long as it would get Ecology's toxic grant for roughly half the cleanup ($8 million) to get a loan for the $8 million for the other half which would be paid back after cleanup benefits.

SOUTH PUGET SOUND REGION ▮ 950 FARMAN ST N ▮ PO BOX 68 ▮ ENUMCLAW, WA 98022-0068
FAX: (360) 825-1672 ▮ TTY: (360) 825-6381 ▮ TEL: (360) 825-1631

Renton was touting the development and was disappointed when PQ walked away from both properties. It scrambled and looked to Ecology local toxics account funds to facilitate cleanup of the site. Renton would offer to cleanup the dirtier of the two properties, the Quendall Terminals site - uplands, shorelands, and beds so long as it would get the Ecology toxics grant for roughly half the cleanup ($8 million) cost and get a loan ($8 million) from another Ecology funding source for the other half. The loan would be paid back after the cleanup was complete by selling the property to PQ (or others who would negotiate for the site if PQ didn't buy) and also conditioned on PQ agreeing to go forward on the adjoining Baxter property (uplands, beds, and shorelands) for cleanup and redevelopment. After some early problems the deals were worked out, as previously mentioned, with Renton and PQ getting options on each property to close on June 1, 1999. Further challenges on the cleanup design with Ecology has now pushed the closing date out to December 31, 1999. This date is a real "drop dead date" in Renton's and PQ's minds since the Ecology funding will not be available for construction if the deals are not closed by December 31, 1999. The deals will not close unless there is an Ecology-Renton and Ecology-PQ pre-purchaser agreement (PPA) in place detailing the remedy for each site. For the PPA to be in place the Cleanup Action Plan (CAP), the Mitigation Restoration Plan, and all permits including Corps 404, NMFS consultation, and DNR permission (a signed property instrument for access for cleanup with all conditions finalized) are in place. Counting backward the CAP, MRP, Corps' permit, NMFS, and DNR process must be completed or in place by approximately November 1, 1999. This means the joint meeting of agencies on the CAP, MRP, and Corps permits will begin around May 20, 1999, in order to complete the draft CAP/MRP by late May with final documents on the street by mid-ugust together with various comment periods completing the process by late October. Renton and PQ, respectively, for each property, are hoping for joint/simultaneous permitting processes, similar CAP requirements, joint MRP and Corps and NMFS processes, and further hoping that all agencies can get their major concerns offered through the joint agency meeting processes - not through the post draft document public comment periods. They want us to be involved NOW and not afterward. The construction (cleanup) will begin ASAP after the December 31, 1999 closings.

The contingencies that will need to be worked out are:

1. Funding in place (the $16 million was expected to be in the 1999-2001 biennial budget). This is the main driver on timing since once the money is available it will need to be spent by June 30, 2001.

2. Option extensions in place from each seller (Baxter and Quendall Terminals) to move closing out to December 31, 1999, from June 1, 1999. The sales to Renton by Quendall terminal and Baxter to PQ.

3. PPA in place with liabilities agreements, CAP and MRP all defined.

4. EPA/Cercla comfort letter received for cleanup.

5. Insurance for cleanup/construction cost overruns in place (i.e., dependent on the PPA and feasibility and transparency of the CAP and MRP to the insurance company(ies).

6. Permits in place (most HPA/SMA-type permits are superceded by MTCA, under the voluntary cleanup regulations), CAP-MRP, accepted ESA-NMFS-Tribal fisheries issues wrapped up.

7. Purchase and sale agreement from Renton to buyer (PQ) for Quendall property in place the parties did not say that it had to close by December 31, 1999, I will find out this detail.

8. I-405 transportation funding/plans resolved.

9. DNR property transaction with all our interests resolved (**which means we'd better figure out what they are**).

CONCEPTUAL PROJECT DESIGN

The cost effectiveness of the cleanup has been increased and the habitat component appears better at first blush, but the wood waste problem persists. The current $16 million budget has been exceeded by the preliminary plans from the consultants' design for the Port Quendall CAP and its portion of the MRP. The new estimated cost is $17.8 million which Renton hopes to reduce or find more funds to make up the $1.8 million (a plea for ALEA funds will be coming for **BOTH** public access facilities and remediation /restoration funds). The $16 to 17.8 million is for the Quendall site alone with all moneys going to more active cleanup (no passive construction upland caps created by parking lots for example) than the old PQ approach for this site. A greater emphasis on removal of PAH and DNAPL's on the uplands is anticipated, with

extraction wells to prevent product migrating to the lake bed. All contaminates, whether dredged off the beds, shorelands, or extracted from the uplands will be treated on site or removed off site not stored in the near shore fill. Consequently, the near shore fill has been removed from the project which is an instant habitat benefit and a reduction of future liability concerns. MRP also looks to restore natural shoreline for the entire length of both properties since the bulkhead and rip-rap are also gone with the elimination of the near shore fill from the project.

The submerged land fix for both properties is similar to the original PQ approach with PAH and 50 percent plus wood waste sediments scheduled to be dredged. The issue that won't go away and remains complex for DNR and habitat trustees and is the less than 50 percent wood waste. Removal of all of the less than 50 percent may break the budget, but the bioassay testing is still the key.

In the earlier PQ project the bioassay issue helped break that project. The idea was that the less than 50 percent wood waste sediments could remain if the bioassay of those sediment passed (at least in Ecology's mind - DNR - division sediment section managers as you recall de prioritized this project saying DNR would follow Ecology's lead on sediment decision, some DNR staff (including this writer) had concerns regarding fish life and leaving wood waste behind). The earlier bioassay results could not be used because of lab problems and the debate on better protocols helped collapse the project due to fears the bioassay results under new protocols would indicate that complete dredging would be necessary. This fear of a larger cost plus the known I-405 transportation costs ended PQ's interest in acquiring and cleaning up both properties. In any case if the bioassays passed that portion of the wood waste sediments would not need to be dredged and would be capped with a thin layer of sand - the method was called "enhanced recovery."

Under the current project the non-dredged area of wood waste would be capped with a foot of clean sediment. However, the bioassay issue is still contentious and DNR's concern about habitat and fish life will weigh in importantly in the ultimate decision on this issue if appropriate staffing can be mustered for this battle. This will be necessary at least to support those in Ecology staff who are looking to new protocols which will point to bioassays that consider dissolved oxygen impacts of the wood waste - a critical fish life - biological component of healthy ecosystems.

Because the earlier project crashed, DNR did not address this contentious issue - made more contentious due to our many log storage leases (DNR liability), and our greater emphasis on fish life/habitat life/ESA at, for example, Port Gamble, nor has DNR addressed the effectiveness of a cap for wood waste at less than 50 percent. This issue has statewide implications and despite the limitation on available funds, if there is a best approach that should be followed, we must support it and condition our approval on it. We could then work for an increase in toxics account moneys or consider as you have suggested possible ALEA assistance.

Moving on to more purely habitat concerns, the pre-MRP presentation we heard appears to call conceptually for an effective restoration of the shoreline and near shore, but DNR expertise will be needed to address the sufficiency of the plan. The determination for the compensatory restoration of past impacts and the need to restore the area to a natural condition, as well as the mitigation requirement for the remediation, are all element of a MRP. There is a desire by both PQ and Renton to characterize as much of the habitat work as mitigation, not restoration so they can bank the work on this project against possible future shoreline developments instead of compensatory restoration for past harm. This of course means a net loss of benefits to the ecosystem overtime if the current developers can bogusly characterize (and sell to future developers) necessary, compensatory restoration as mitigation-banking for future projects that then could go forward with greater impacts. Some writers have argued that with the ESA listing this will never happen, but there continues to be an emphasis by developers nationwide to bank mitigation as a commodity. DNR should insure total compensation from all past harm, insist on a rebuilt natural system and extract additional mitigation from the cleanup's structural and other impact's on the ecosystem, most especially if we can bring funding to the table.

Consequently, the bioassay - wood waste cap issues plus the MRP issues appear to be the area of flux and need some expertise from the division. Also, we are working in a milieu (the voluntary Brownfield-Greenfield arena) that any major toughening of a position could break the budget and DNR would end up with no party taking responsibility at these sites. The balance between doing the right thing and being expedient is not, however, necessarily weighted on the expediency side, because of what we may be able to do to help----ALEA, free DNR clean sand/sediments, expertise and influence to get additional toxics funds budgeted for the site, and putting significant pressure to extract additional moneys from the sellers, since they are avoiding significant liability(greater than the value of the property they are surrendering).

DIRECTION - STAFFING:
As mentioned above, to do good analysis on these issues we need both sediments and habitat staff looking out for DNR's interests. This site may set statewide precedents on wood waste issues.

Tim Goodmann is assigned here, but considering his current priorities this site may not rank high on his list. John Boettener is 95 percent Cherry Point until June 30, 1999. It is unclear whether he will have any time for the formative discussions on MRP and bioassay-habitat concerns before June 30. Jonathan Gurish, indicated that he has time to represent our interests well. We have lease, rent and contractual commission of waste-site restoration issues with the sellers Baxter and Quendall and liability-indemnity issues out of those leases that need to be handled with the PPA or consent decree or elsewhere. Some of these lease/contract issues should be evaluated for leverage in extracting funds from the sellers for any enhancement to the cleanups

The meeting schedules for the CAP, MRP, and Corps permits process will be frequent, perhaps weekly for one-half day or more at a time. Tim, John, Jonathon, or I should attend as required. I see my role as facilitator, project manager, and property instrument processor (and drafting with Jonathan). Assuming a DNR priority here then technical staff is needed. If no major priority, Jonathan and I need to be involved for property instrument general trustee/liability matters. My time is quite limited due to OPL, Piers 55 and 56, Pier 70, Pier 54, Edgewater, Boeing, and PS Energy all running simultaneously and all parties expecting resolution over the next few months (through July-September period). I also have some significant leave scheduled before August 10. In addition a direction/approval, process on this matter needs to be defined - help me if you can.

Finally, Art informed you about Renton's desire to contact the Commissioner to try to move this project into her sights again. I hope the detail of this memo helps prepare you for any questions you get. Also, Mr. Joyce (Renton's lawyer) asked if they should meet with you first.

Please get back to me on these points as soon as you can.

DB/bh

c: Art Tasker
Mark Mauren
John Boettener
Tim Goodmann
File MAR99\Bortz Memo to Bonnie final

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September 10, 1999
Project No. KB99142A

To: Participant

Subject: Mitigation Analysis
Quendall and Baxter Properties Remediation Project

Dear Mr./Ms. Participant:

This letter is an invitation to participate in the Remediation Mitigation Analysis for the Quendall and Baxter Remediation project. This project was originally introduced to all interested agencies and the Muckleshoot Indian Tribe during a pre-application meeting at the U.S. Army Corps' offices on January 15, 1997. Regularly scheduled meetings to review the existing site conditions, remediation alternatives, and mitigation strategies took place through July 1997, at which time they stopped. A report summarizing the on-site conditions was produced and distributed to all participants shortly before the project ceased active mitigation analysis consultation to reconsider scale, ownership, and remediation approach. Remediation has become much less intrusive to the shoreline and on-site wetlands since July 1997, after considerable work between the City of Renton, Vulcan Northwest, and the Department of Ecology. Description of the revised remediation plans for both properties and valuation of the affected resources is proposed for the first meeting on September 29, 1999.

We have scheduled three meetings at 1-month intervals as follows:

Meeting Date	Topics	Products and Responses
Wednesday, September 29, 1999	1. Orientation: Project Description & Existing Conditions Review 2. Current Remediation Proposal 3. Review Draft Impact Evaluation	Handout: Draft Impact Evaluation Response: Due back October 6.
Wednesday, October 20, 1999	1. Finalize Impact Evaluation 2. Review Draft Mitigation Plan	Handout: (1) Revised Impact Evaluation, and (2) Draft Mitigation Plan Response: Due back November 3
Wednesday, November 17, 1999	1. Finalize Mitigation Plan	Handout: Revised Mitigation Plan

Products from these three meetings will be used to prepare a Mitigation Analysis Technical Memorandum, that would be submitted with the Site-Wide Remediation Memorandum for the project.

Your participation is important to the development of this Memorandum. We understand that not all meetings and milestone dates will be convenient for everyone's schedule. However, we are optimistic that participation through personal representation at the meetings, or through written or verbal comment as your schedule allows, will allow the entire team to benefit from the collective input. All products and all meeting notes will be sent to all parties on the attached list to ensure the entire team is kept abreast of progress. Other participants are welcome to join, and will be added to the team list as their interest is made known to us. Please call if you wish to be removed from the team list, or if you wish to be replaced by someone else.

Please plan on having all meetings scheduled from 09:00 to 12:00 on the Wednesdays noted in the above schedule. All meetings are planned to take place at Renton City Hall, 7th Floor Council Chambers. Renton City Hall is located at 1055 South Grady Way in Renton. Please call Debra at (425) 430-6580 if you need directions to City Hall.

I look forward to continuing this project with all of you, as well as to this opportunity to improve Lake Washington's habitat value on these sites through the remediation project and our mutual efforts. Your comments and questions are welcome at (425) 827-7701. If I am unavailable, please leave a voice mail, or for more urgent matters contact Judith Light or Carl Hadley at the same number.

Sincerely,
ASSOCIATED EARTH SCIENCES, INC.
Kirkland, Washington

Andrew C. Kindig, Ph.D.
Sr. Associate Biologist/Water Quality

Enclosure: Participant List

ACK/ld
KB99142A16
9/10/99 ld – W97

QUENDALL/BAXTER REMEDIATION MITIGATION MEETING
ON SEPTEMBER 29, 1999, 9:00-12:00
RENTON CITY HALL

AGENDA:

I. INTRODUCTION

(A) Introduction, guest list, changes, process, future meetings
(B) What we intend to accomplish
(C) Economic drivers to the schedule
(D) Where we've been; description of existing resources, field visit, Beak report

II. QUENDALL/BAXTER FOCUS

(A) Remediation mitigation only
- Commitments may constrain later development
- Not necessarily separate by property boundaries

(B) Basic description of remediation – very different from last time (ThermoRetec and Exponent)

III. PHYSICAL FOOTPRINT OF THE IMPACT

(A) Wetlands (JBL)
- DEA delineation
- Corps agreement
- What will be gone

(B) Shoreline/Fish (CGH)
- Shoreline/offshore – fish use/windows of use
- What will be gone

IV. REMEDIATION IMPLEMENTATION

(A) Dredging, capping, cleanup action overview (ThermoRetec and Exponent)
(B) Questions and answers

V. WHERE WE'LL GO NEXT – NEXT MEETING PLACE

(A) Intermediate products
(B) Questions

Wetlands Dredged or Filled by the Quendall and Baxter Remediation Actions (Refer to Figure 1)

Wetland	Area (Acres)	Physical Characteristics	Biological Support	Impact
A	0.20	Wetland along Lake Washington shoreline, minor surface discharge from project site; some shoreline protection provided by vegetation and logs embedded nearshore; little flood control, base flow support or water quality improvement is provided.	PFO – immature red alder with a Himalayan blackberry understory and a sparse herbaceous cover of cattail, reed canarygrass, buttercup, and flag iris; habitat value is moderate due to adjacency to the lake; provides potential habitat for amphibians, passerine birds and limited waterfowl nesting – observed wildlife use includes Canada goose, beaver, several species of passerine birds.	A portion to be excavated and replaced with clean material; remainder to be capped with 3 feet of clean material.
B	0.37	Wetland along Lake Washington shoreline, minor surface discharge from project site; some shoreline protection provided by vegetation and logs embedded nearshore; little flood control, base flow support or water quality improvement is provided.	PFO – red alder with a hardhack and Pacific willow shrub layer; habitat value is moderate due to adjacency to the lake; provides potential habitat for amphibians, passerine birds and limited waterfowl nesting, observed wildlife use includes Canada goose, beaver, several species of passerine birds.	A portion to be excavated and replaced with clean material; remainder to be capped with 3 feet of clean material.
C	0.17	Excavation in fill material; detains drainage from log yards; no outlet was observed and the area appears to be isolated from ground water, therefore no base flow support is provided by this wetland; water quality improvement provided by detention of log yard runoff.	PSS/PEM/POW – black cottonwood saplings, cattails and soft rush; perennial open water; low habitat value due to low vegetative diversity and isolated nature of area; observed wildlife use includes Canada goose, and mallards.	Excavated and replaced with clean material.

Fish Habitat - Valuation of Physical Shoreline Characteristics in Remediation Area

Characteristic	Current Condition	Fish Habitat Value	Mitigation Opportunities
Vegetation	Shrubs dominated by non-native Scotch broom and Himalayan blackberry to the exclusion of native species; small hardwoods; relatively undiverse structure.	Low growing vegetation including grasses and shrubs provide overhanging visual refuge for fish, bank stability, insect habitat (prey item), and shading; trees provide similar functions plus source of large woody debris, and overhanging banks when rootball is undercut.	Increase vegetated shoreline including shrubs and trees; reduce dominance of non-native species.
Bank Type	Beach type shoreline dominates. Anthropogenic features (e.g. piers, bollards, etc.) are also common. Eroding dirt along shoreline at southeast.	Historically the lake shoreline was primarily low-gradient beach habitat formed as the delta of May Creek; LWD on beach may provide juvenile sockeye refuge. Alternative shoreline types (e.g. bollards, rip-rap, etc.) provide some diversity and rearing/refuge habitat for juvenile salmonids.	Shoreline dominated by beach habitat/wetland; other shoreline features (e.g. rocks, logs) included in minor proportions for diversity.
Bank Protection	Approximately 15% anthropogenic structures; logs along 86% of shoreline and in shallow nearshore lake environment.	Fallen trees along the shoreline provide bank stabilization as well as quiet backwater rearing habitat for juveniles. Logs enhance primary productivity in nursery areas. Rocks and rootwads provide refuge and habitat diversity.	Remove/minimize anthropogenic shoreline protection; maintain/increase downed log numbers within nearshore area.
Substrate	Dominated by fine materials including sand and silts; gravelled substrate around 12% of shoreline; abundant wood chips in areas.	Clean gravels provide potential spawning habitat for salmonids as well as macroinvertebrate habitat; finer materials anchor vegetation and are preferentially inhabited by other aquatic species; dense wood chips provide no benefit.	Increase proportion of clean gravels; maintain other sediments in lesser proportions for diversity. Remove wood chips as practicable.
Depth	Mostly (69%) very shallow nearshore environment (<1 foot within 5 feet offshore). Occasional deeper areas.	Juvenile salmonids prefer nearshore shallow habitat at night; deeper areas provide adult holding and refuge especially when combined with overhanging banks or other complex structures. Intermediate depths for vegetation.	Maintain high shallow area component consistent with historic delta habitat; provide deeper areas for diversity.

Lake Washington Shoreline Characteristics

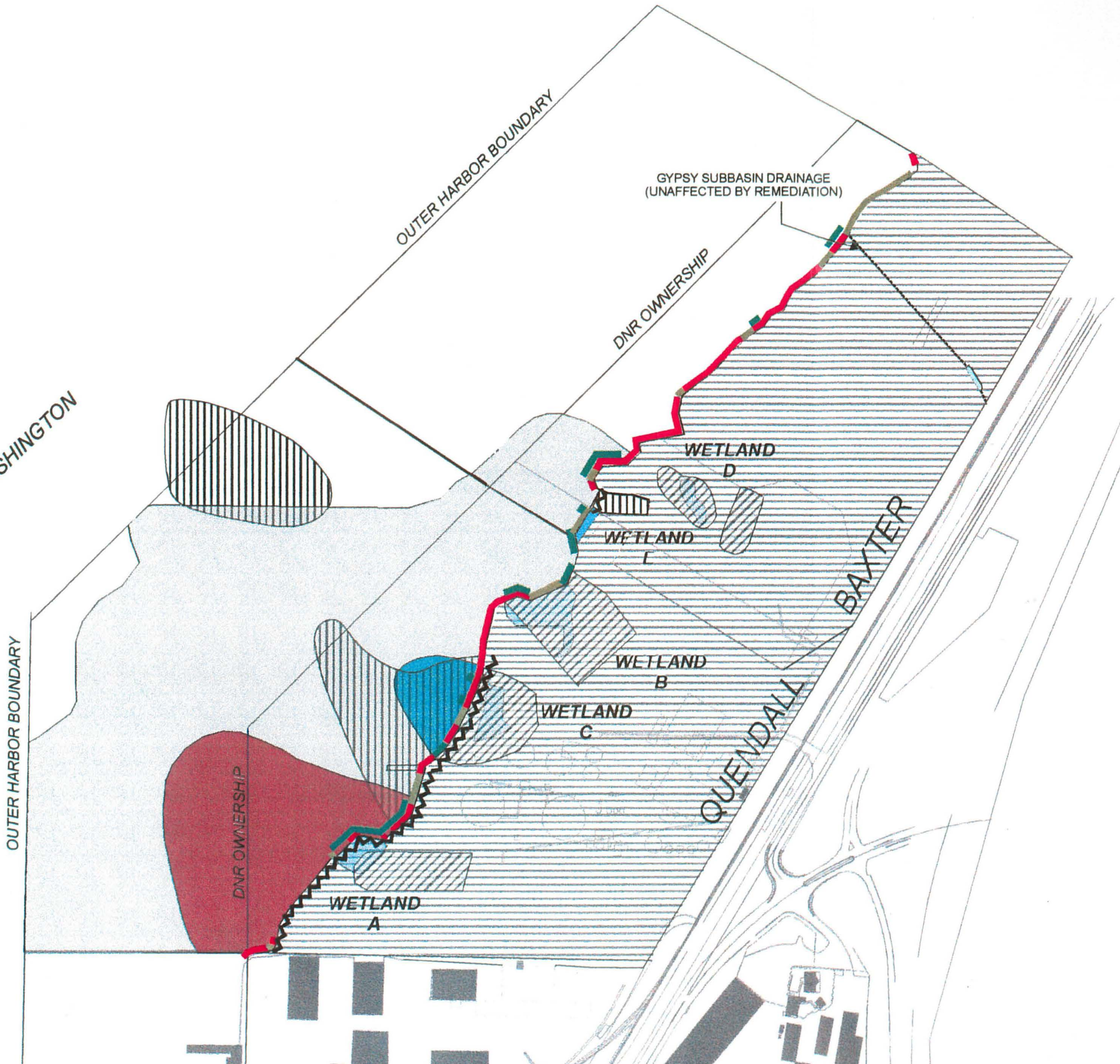
Port Quendall, Baxter Properties
(3,130 feet, surveyed 11 April 1997)

Category	Characteristic	Existing Conditions		Remediated Conditions			Mitigated
		Linear Distance (ft)	Coverage (%)	Linear Distance (ft)	Coverage (%)	Change %	Condition Goal
Vegetation	none	800	26%	1460	47%	**+83%**	-
	blackberry	1425	46%	1000	32%	**-30%**	-
	shrubs	905	29%	670	21%	**-26%**	+
	trees	770	25%	425	14%	**-45%**	+
	wetland	535	17%	255	8%	**-52%**	=/+
Bank type [1]/	beach	805	26%	485	15%	**-40%**	+
Protection	vertical dirt	930	30%	750	24%	**-19%**	-
	rip -rap	415	13%	335	11%	**-19%**	-
	bulkhead	0	0%	0	0%	**+0%**	-
	log bollard	515	16%	435	14%	**-16%**	-
	pier	55	2%	35	1%	**-36%**	-
	building	35	1%	35	1%	**+0%**	-
	log skid	35	1%	20	1%	**-43%**	-
	undercut	110	4%	110	4%	**+0%**	=/-
	inlet	820	26%	690	22%	**-16%**	=/+
	logs	2550	81%	1505	48%	**-41%**	+
Substrate [2]	mud/silt	755	24%	325	10%	**-57%**	=/-
	sand	1685	54%	1080	35%	**-36%**	=/-
	gravel	690	22%	1725	55%	**+150%**	=/+
	woodwaste [3]	500	16%	0	0%	**-100%**	-
Depth [2]	0-1'	1775	57%	1775	57%	**+0%**	=/+
	1-2'	870	28%	870	28%	**+0%**	=/+
	>2'	485	15%	485	15%	**+0%**	=/-

[1] Bank type assumes capping does not affect existing bank.

[2] Measured or sampled approximately five feet out from shoreline;
Remediated condition assumes lake bed capped with clean gravel to original elevation.

[3] Woodwaste = areas where chips and bark exceed 50% surface coverage.



LEGEND

- Area of remediation impact along the shoreline
- Wood waste >50% removed with dredging
- Potential 1-foot sediment cap
- Dredge to 6' and replaced with clean material to original grade
- Dredge to 3' and replaced with clean material to original grade
- 3' cap with clean material or cap with redevelopment
- Excavated to required depth to remove contaminants and replaced with clean material to capped grade
- Blackberry
- Shrubs
- Trees

NOTE: ALL HABITAT, WETLAND, AND PROJECT FEATURE LOCATIONS AND QUANTITIES ARE APPROXIMATE.

NORTH

0 100 200 300 400

APPROXIMATE SCALE IN FEET

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ASSOCIATED EARTH SCIENCES, INC

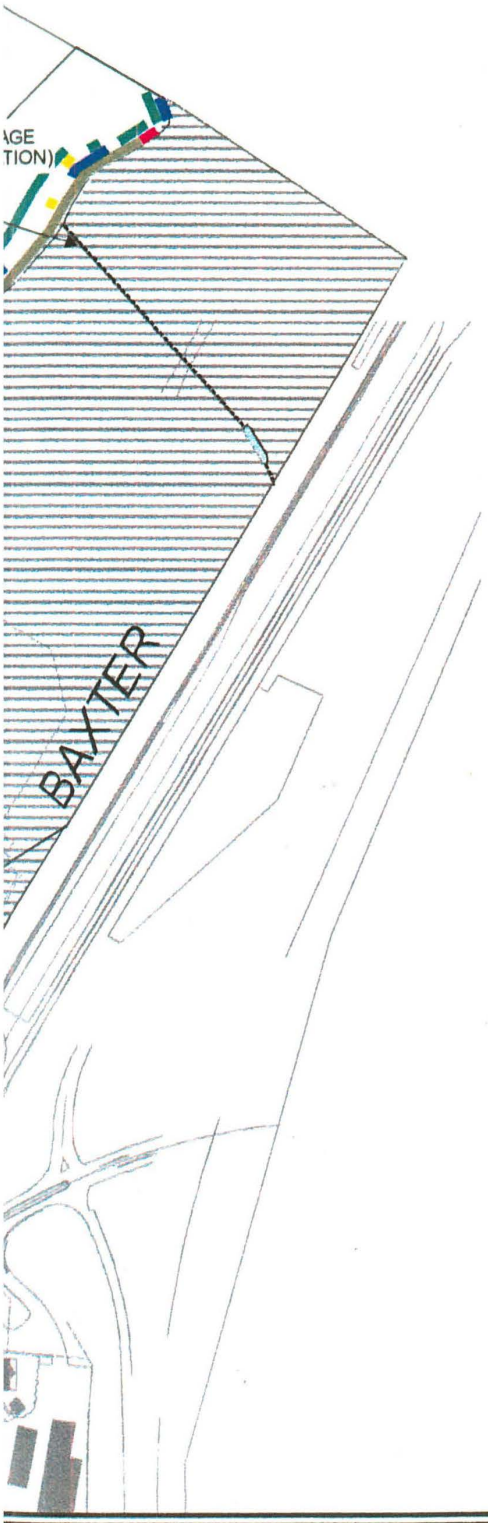
WETLANDS AND SHORELINE VEGETATION

QUENDALL AND BAXTER PROPERTIES
REMEDIATION FOOTPRINT
RENTON, WASHINGTON

FIGURE 1

DATE 9/24/99

PROJ. NO. KB99142A



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- Excavated to required depth to remove contaminants and replaced with clean material to capped grade
- Beach
- Vertical dirt
- Rip-rap
- Undercut
- Log bollard
- Logs in lake

NOTE: ALL HABITAT, WETLAND, AND PROJECT FEATURE LOCATIONS AND QUANTITIES ARE APPROXIMATE.

NORTH

0 100 200 300 400

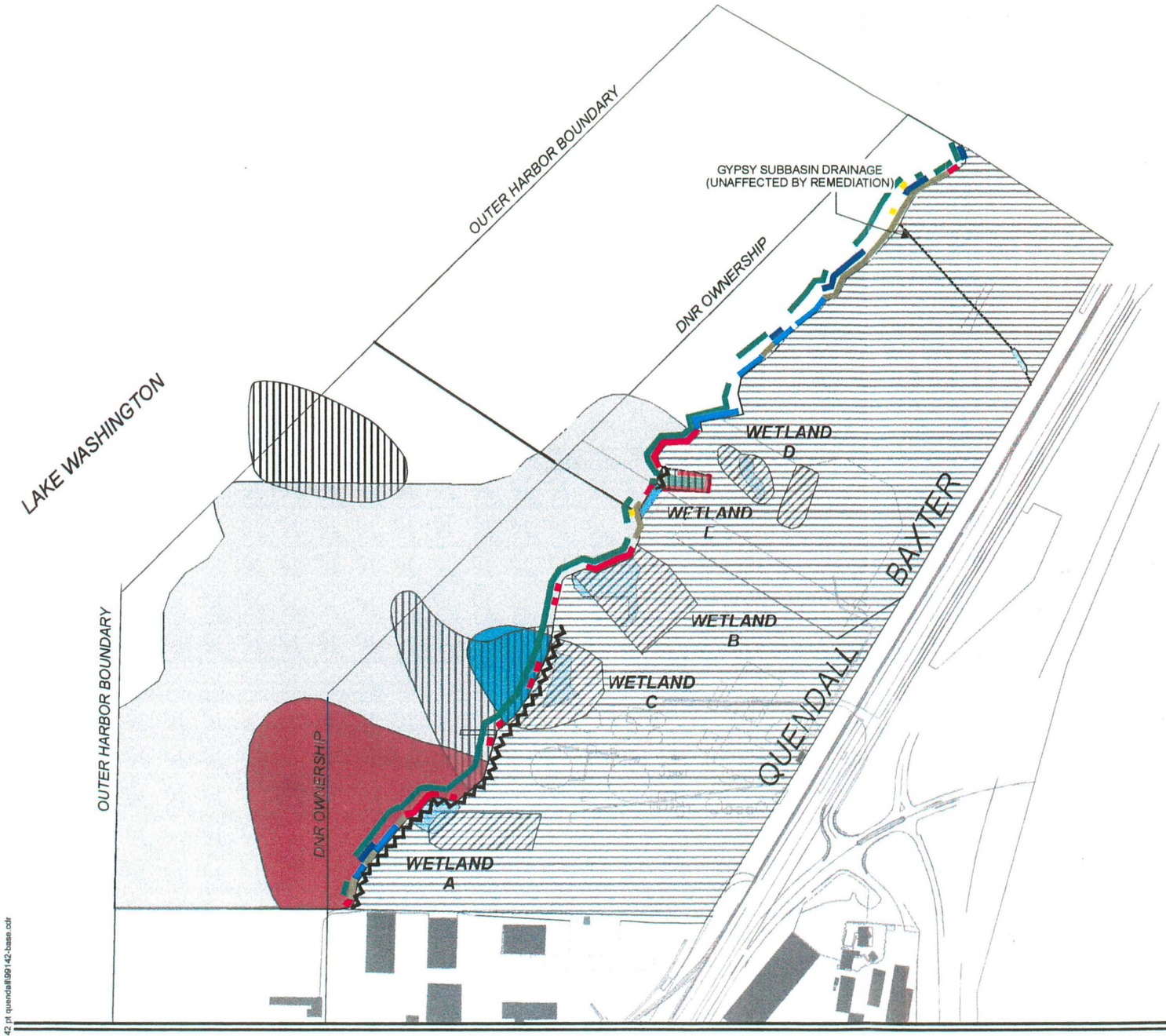
APPROXIMATE SCALE IN FEET

D SHORELINE STRUCTURE
AND BAXTER PROPERTIES
DIATION FOOTPRINT
TON, WASHINGTON

FIGURE 2

DATE 9/24/99

PROJ. NO. KB99142A



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NORTH

0 100 200 300 400

APPROXIMATE SCALE IN FEET

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ASSOCIATED EARTH SCIENCES, INC

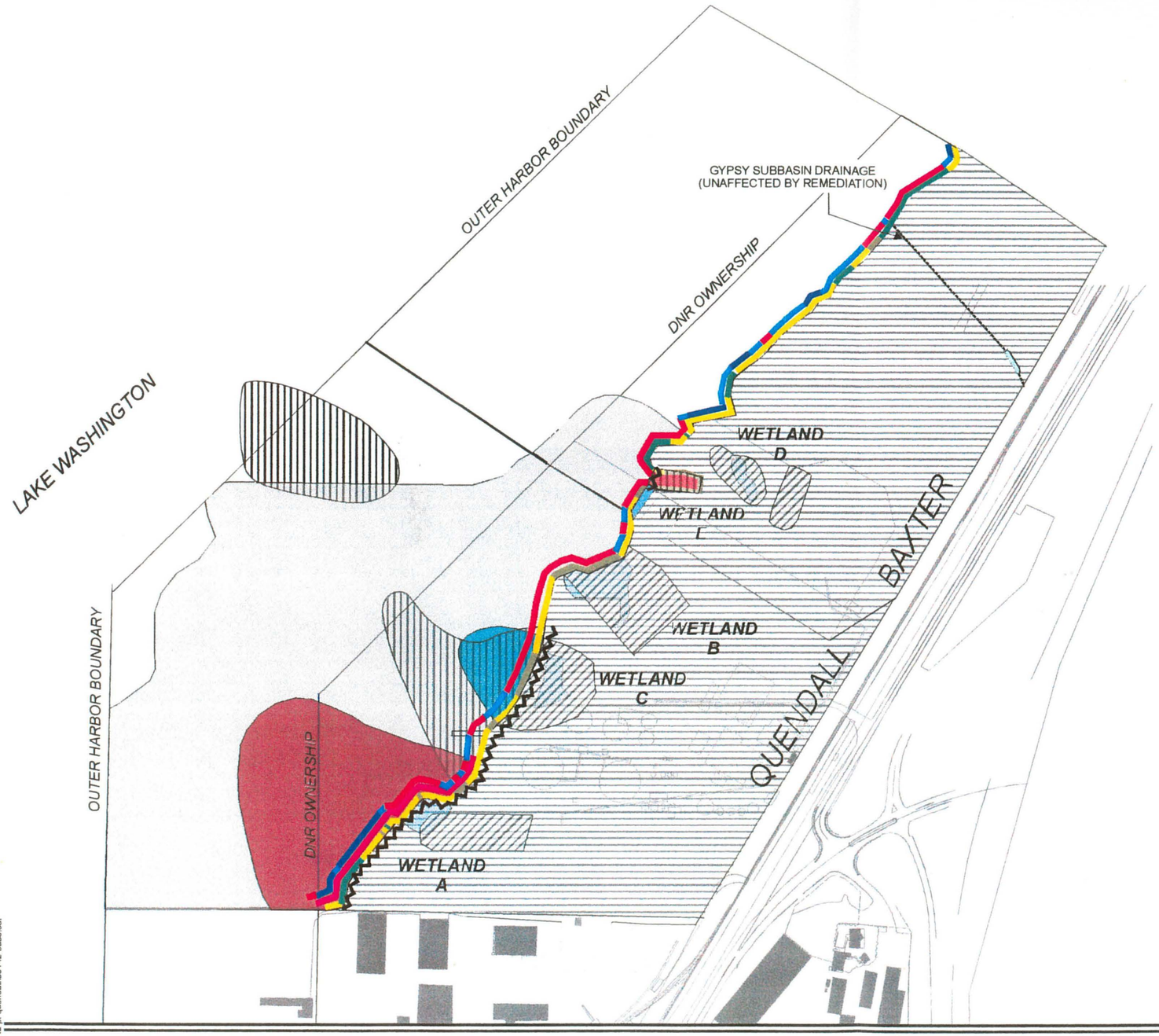
WETLANDS AND SHORELINE STRUCTURE

QUENDALL AND BAXTER PROPERTIES
REMEDIATION FOOTPRINT
RENTON, WASHINGTON

FIGURE 2

DATE 9/24/99

PROJ. NO. KB99142A



LEGEND

Area of remediation impact along the shoreline

Wood waste >50% removed with dredging

Potential 1-foot sediment cap

Dredge to 6' and replaced with clean material to original grade

Dredge to 3' and replaced with clean material to original grade

3' cap with clean material or cap with redevelopment

Excavated to required depth to remove contaminants and replaced with clean material to capped grade

SUBSTRATE

Mud silt

Sand

Gravel

>50% wood chips

DEPTH

0-1 foot

1-2 feet

>2 feet

NOTE: ALL HABITAT, WETLAND, AND PROJECT FEATURE LOCATIONS AND QUANTITIES ARE APPROXIMATE.

NORTH

0 100 200 300 400

APPROXIMATE SCALE IN FEET

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WETLANDS AND SHORELINE SUBSTRATE AND DEPTH

QUENDALL AND BAXTER PROPERTIES
REMEDIATION FOOTPRINT
RENTON, WASHINGTON

FIGURE 3

DATE 9/24/99

PROJ. NO. KB99142A

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October 5, 1999
Project No. KB99142A

To: All participants who missed the September 29, 1999 meeting

Subject: Mitigation Analysis:
Quendall and Baxter Properties Remediation Project

Dear Mr./Ms. Participant:

I am sorry you were unable to attend the September 29, 1999 meeting in the 7th Floor Council Chambers at the Renton City Hall. As promised in the invitation letter sent to you on September 10, 1999, this package contains minutes from that meeting and copies of all handouts provided during the meeting.

The minutes are based on my notes, and notes from some of the other participants. As you might expect, they reflect major topics and points, and are not intended to be a transcript of the meeting. We encourage you to attend the next meetings at the same location and time (9AM to 12PM) on Wednesday, October 20, 1999, and Wednesday, November 17, 1999. We will be distributing and discussing a draft mitigation plan at the next meeting, with the goal of finalizing it during November's meeting.

Please give me a call if you have any questions.

Sincerely,
ASSOCIATED EARTH SCIENCES, INC.
Kirkland, Washington

Andrew C. Kindig, Ph.D.
Sr. Associate Biologist/Water Quality

Enclosures

cc: (without enclosures): Chuck Wolfe, Foster Pepper & Shefelman
Bill Joyce, Ogden, Murphy & Wallace
Sue Carlson, City of Renton

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October 6, 1999
Project No. KB99142A

To: All Quendall/Baxter Remediation Mitigation Participants

From: Andy Kindig, Associated Earth Sciences, Inc.

Subject: Summary of September 29, 1999 Meeting Discussion

The following summary is based on notes and recollections from Andy Kindig, Carl Hadley, and Judith Light, all with Associated Earth Sciences, Inc. (AESI). We have also attached all handouts distributed at the meeting for those on the participant list that did not attend.

List of Attendees:

Glen St. Amant, Muckleshoot Indian Tribe
Carl Hadley, Associated Earth Sciences, Inc.
Andy Kindig, Associated Earth Sciences, Inc.
Judith Light, Associated Earth Sciences, Inc.
Larry Fisher, Washington Department of Fish and Wildlife
Cathy Petito Boyce, Exponent
Ron Straka, City of Renton
Sue Carlson, City of Renton
Jennifer Henning, City of Renton
Carol Cloen, Washington Department of Natural Resources
Grant Hainsworth, ThermoRetec
Deb Lester, King County Department of Natural Resources
Lynn Manolopoulos, Davis Wright Tremaine
Jonathan Frodge, King County Water and Land Resources Division
Ron Devitt, Washington Department of Ecology
Gail Colburn, Washington Department of Ecology
Chuck Wolfe, Foster Pepper & Shefelman

List of Handouts:

Revised list of Participants (dated 9/28/99)
Agenda for 9/29/99 Meeting (1 page)
Table listing wetlands dredged or filled by the remediation actions (2 pages)
Table listing shoreline and fish habitat characteristics affected by the remediation actions (2 pages)
Color Figure showing the imprint of the remediation actions over wetlands and shoreline vegetation (1 page)
Color Figure showing the imprint of the remediation actions over wetlands and shoreline structure (1 page)
Color Figure showing the imprint of the remediation actions over wetlands and shoreline substrate and depth (1 page)

Summary of Discussion:

Sue Carlson: Introductions, welcome, and description of how funding for the remediation action has been developed. The City has the Quendall parcel under contract (expiring December 31, 1999) to determine the extent of cleanup action and determine sources of funding for the cleanup. The best opportunity at present is an $8 million grant from Ecology. However, Ecology needs to know if the City really has a viable project by 12/31/99 or the grant may no longer be reserved for this action. Thus, the City seeks to show, through this remediation mitigation process and other parallel actions, that real progress is being made by the end of the year. This is the best chance to get the site cleanup done that the City can see on the horizon.

Andy Kindig: Ran through a general overview of where we are in the process, and what we need to accomplish in a short period of time. When the mitigation portion of the project last took a break from agency interaction, we had concluded field visits, literature gathering, report descriptions, slide shows of resources and the shoreline, and distribution of the existing conditions (Beak Consultants Incorporated, May 23, 1997 Port Quendall Mitigation Analysis Memorandum). All participants were asked to retrieve that document from their files, or obtain it from those within their agencies or departments that participated in the past.

Present effort is focused solely on the two northern parcels, Quendall and Baxter. The remediation is much less intrusive in Lake Washington than previously proposed, due to elimination of shoreline slurry walls and any fill of Lake Washington. The revised remediation plan is the result of much work between Ecology, the City of Renton, and Vulcan Northwest. Final cleanup action plan agreements are underway.

The remediation commitments will constrain subsequent development of the two properties, though planning for that development lags behind the remediation planning and no proposal for development is currently submitted. It is not necessarily the case that remediation impact and mitigation need occur separately on each site. Without development proposals, it may be necessary to describe mitigation commitment without a specific location on the site.

Ron Devitt: Water quality from construction of the development and from implementation of the remediation will be overlapping, and should be cumulatively considered for management to avoid impacts. For example, there could be a requirement to excavate into the remediation cap if the two actions are not coordinated. Useful to at least consider utility corridors during remediation.

Andy Kindig: Agreed. Evaluation can be separated into three distinct items: (1) the long-term fill / excavation impacts of remediation; (2) implementation of remediation itself (i.e., construction-phase); and (3) subsequent development on the site. However, the goal is to have the development proposal "catch up" to the remediation and remediation mitigation planning, so all work can be considered as a whole.

Glen St. Amant: Enquired about the sediment cleanup process. [This inquiry was deferred to later in the agenda.]

Cathy Boyce: Using the three figures distributed to the group, the physical impact of the remediation was summarized for the group.

Gail Colburn: Will Cedar River sediments still be used for clean fill?

Cathy Boyce: Those sediments are no longer available.

Glen St. Amant: Will the grain size be similar to pre-existing, and will sterile sand be avoided?

Grant Hainsworth: Clean sediment will be specified and imported; similar grain size will be specified.

Gail Colburn: Is a slurry wall still included?

Grant Hainsworth: No, now focusing efforts on nearshore soil removal, rather than containment.

Andy Kindig: Noted that sparging wells and other remediation plan elements are not included in Figures 1 through 3, since they had no environmental impact. [Locations of these features and clarification of air sparging was made by Grant Hainsworth during subsequent questions by Ron Devitt.]

Judith Light: The five wetlands A-D were briefly described from the table that was distributed in terms of size, vegetation composition and functions and values. The impacts from remediation (fill) were also described for each.

Carl Hadley: Fisheries use of the shoreline, particularly chinook and sockeye runs through the summer and spring northward along the shore, were discussed, with reference to the shoreline features table distributed.

Gail Colburn: Noted that she had seen one pair of sockeye spawning just north of the old T-dock location, and had seen beaver in the area.

Carl Hadley: There are no known areas of upwelling sufficient to support viable redds in the area, based on dives, video tapes, and photographs along the shoreline by others for the remediation.

Judith Light: Beaver activity is readily apparent along the shore and in some of the wetlands, as are turtles in Baxter Cove (Wetland E).

Andy Kindig: Briefly added comments on Gypsy Subbasin Drainage, which is piped under most of the site on the Baxter parcel. Remediation will not affect that feature as it now exists. Also, there is considerable structure offshore in the form of pilings and dolphins, which the remediation itself would not remove unless they physically prevented implementation of the proposed remediation. Kindig also noted water quality data in original Beak report on existing conditions that was distributed to all participants at the end of the last series of meetings.

Grant Hainsworth: Summarized implementation of the remediation action. The offshore dredging would be mechanical or hydraulic dredge, but not an open clamshell dredge. A Cable Arm™ dredge with a closed bucket is the most likely mechanical method to be considered. Dredge operators largely control turbidity and total suspended solids (TSS) during dredging through control of auger or cutter head speed, the rate of dredge cut, and the depth of dredge cut. It is variability in operator control that gives the range of 18 mg/L TSS up to >1,000 mg/L TSS that you see in the literature. Thus, for this project, selection and oversight of the operator will be essential. Other engineering controls to limit sediment dispersal will be silt curtains and silt screens. Since all

contaminants are associated and bound to sediments, no significant dissolution into the water is expected. That makes sediment control even more important to remediation implementation. To prevent spillage, a spill apron barge could be used, and barges could be sealed to prevent water from escaping prior to upland treatment and disposal, possibly to the sanitary sewer. If a hydraulic dredge is used, lined ponds would be created to contain and treat dewatering water.

Ron Devitt: Agreed that operators are key. Indicated that Quendall/Baxter is a "touchy" project because unlike others, the contaminants are much more broadly spread. Also, Lake Washington is a focal point for the Seattle-area community. Thus, turbidity and TSS controls will need to be AKART (all known, available, and reasonable treatment), not just the minimum or routine conventional treatment, such as silt curtains.

Grant Hainsworth: [To Ron Devitt] What types of BMPs do you have in mind for AKART?

Ron Devitt: Polymer treatment, or use of sanitary sewer as contingency for disposal were listed. Ron likes the idea of a second spill apron barge, but would like to see the potential for spillage eliminated, rather than just provision for something to catch spillage. Ron also noted that the contractors themselves may have some ideas on what they could do. Final definition of AKART is something that will have to be discussed.

Gail Colburn: [To Ron Devitt] Are you thinking of a separate water quality group to discuss remediation implementation measures to control sediment?

Ron Devitt: That's something to consider.

Johnathon Frodge: Noted that the east side interceptor to the Renton treatment plan is nearby the project.

Andy Kindig: [To Ron Devitt] What would be the best vehicle to define AKART prior to permit application, so that some reflection of the intention for sediment control will be in the Quendall/Baxter remediation mitigation memorandum prior to any specific application to Ecology?

Ron Devitt: That will be up to the Applicant to decide. The remediation action could consider/integrate with TESCs for subsequent development on the site to control water quality.

Chuck Wolfe: This is definitely the content of a 401 Certification, which will be handled after the mitigation plan.

Andy Kindig: True, however there is some relevance in considering the types and feasibility of measures to contain sediment during remediation, since it is mitigation to prevent greater or additional impacts beyond the physical impacts we have a good handle on.

Chuck Wolfe: The engineering design drawings will specify TESC for the 401 Certification / 404 permit

Andy Kindig: Grant Hainsworth, Cathy Petito Boyce, and Andy Kindig can talk out the types of TESC measures that will likely be employed for the purposes of this document, without going to the level of engineering design that will be prepared for later permit applications.

Ron Devitt: Agreed with this approach, and pointed out that issues related to water quality will be important for public review and comment.

Gail Colburn: Noted that Baxter Cove gets its water from Lake Washington, as well as from ground water, and she would like to see it mitigated by replacement in the same location, given the level of biological use noted in that specific portion of the project.

Glen St. Amant: Are there places on the project where mitigation should not go due to the remediation work?

Andy Kindig: We will check mitigation plans with ThermoRetec and Exponent to ensure that there are no conflicts.

Gail Colburn: What will likely wetland mitigation ratio be?

Judith Light: Likely 1:1, given enhancement aspects of the future plan and current value of those wetlands.

[*Subsequent Note of Correction:* Mitigation ratio will likely be per Renton Code, which would be 1.5:1 for most or all of these wetlands.]

Larry Fisher: Would like to see Gypsy Subbasin open for fish passage, and would like to see some work done at the mouth of Gypsy Subbasin drainage and Lake Washington, either as part of remediation or as part of subsequent development. It would be a good idea not to take a remediation approach that precludes daylighting of the Gypsy Subbasin culvert. He agrees it's a good idea to restore Baxter Cove (Wetland E) in its present location. He indicated that WDFW will want a minimum of 2:1 replacement for wetland restoration.

Ron Devitt: Thought it likely that Eric Stockdale with Ecology (not present) would like more than 1:1 ratio on wetland replacement.

[*Note:* Gail Colburn had not talked with Eric, and it was agreed that Judith Light would talk with him by telephone].

Ron Straka: Agreed that daylighting Gypsy Subbasin would be a good idea, and also does not want remediation to preclude daylighting. Noted that the Gypsy Subbasin culvert could be crushed with the 3 feet of capping fill, and also noted that if the future intent was ever to daylight the culvert, it may be wise to remove the contaminated soil over it and cap it elsewhere. The on-site sediment balance may benefit from daylighting of this feature, since clean material will need to be imported. Also, it may be a good development feature.

Grant Hainsworth: Indicated the contamination over Gypsy Subbasin was not a problem with regard to future daylighting.

Sue Carlson: The current Renton code for pipe setbacks is 25 feet in commercial and residential zones, but is planned for a change to 50 feet in commercial zones in the near future.

Andy Kindig: Questioned whether, in trade for daylighting Gypsy under the remediation or future development, there would be incentive from WDFW to accept a lesser buffer width, as well as some structure (retaining walls or rock in combination with vegetation) in the riparian area to allow for the deep cut (likely about 15-20 feet at the east end, and 6-10 feet at the west end)?

Gail Colburn: Reiterated question to Larry Fisher about vegetated terraces along Gypsy Subbasin drainage in exchange for narrower buffer.

Larry Fisher: It's possible, he really couldn't say. He does think the pilings and dolphins offshore are better held as mitigation for future development, rather than plan on removing them as mitigation for the remediation.

Andy Kindig: Emphasized that no mitigation was going to be proposed for offshore removal of >50 percent wood waste; or for the potential capping of <50 percent wood waste if the final agreement with Ecology required it.

Glen St. Amant: When will the cleanup plans be finalized, and when will the Muckleshoot Indian Tribe be able to see them?

Grant Hainsworth: The final cleanup plans will be submitted to Ecology in mid-October.

Sue Carlson: The City will have a separate briefing with the Muckleshoot Indian Tribe prior to submittal.

Action Items:

(1) Andy Kindig, Grant Hainsworth, and Cathy Petito Boyce will discuss a TESC description and reference future 401 permit requirements for inclusion in the remediation mitigation document.

(2) AESI will prepare a draft mitigation plan for the next meeting on October 20, 1999 (same location)

(3) Judith Light will discuss wetland mitigation ratios with Eric Stockdale at Ecology for consideration in preparing the draft mitigation plan.

Next Meeting:

Wednesday, October 30, 1999, from 9AM to 12PM in the 7th Floor Council Chambers at the Renton City Hall, 1055 South Grady Way. Please call Debra at (425) 430-6580 if you need directions to City Hall.

ACK/ld
KB99142A29
10/1/99 ld - W97

Effective 10/6/99

1999
QUENDALL AND BAXTER REMEDIATION PROJECT: MITIGATION ANALYSIS TEAM LIST

POTENTIAL APPLICANTS AND CONSULTANTS

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